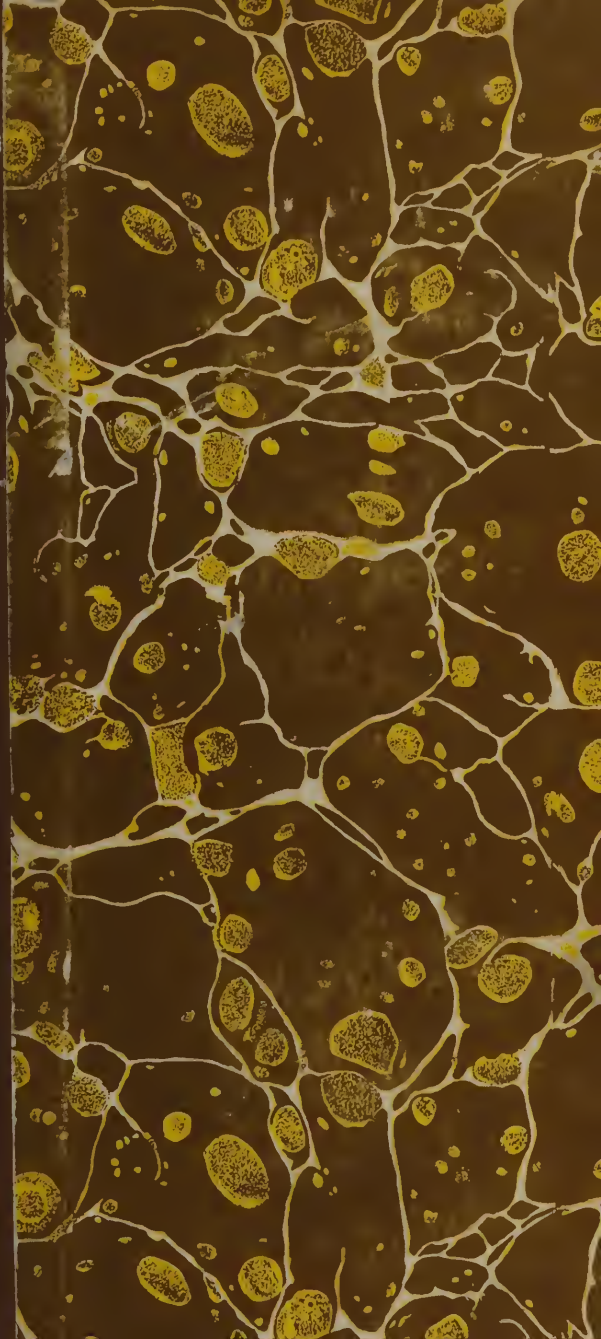
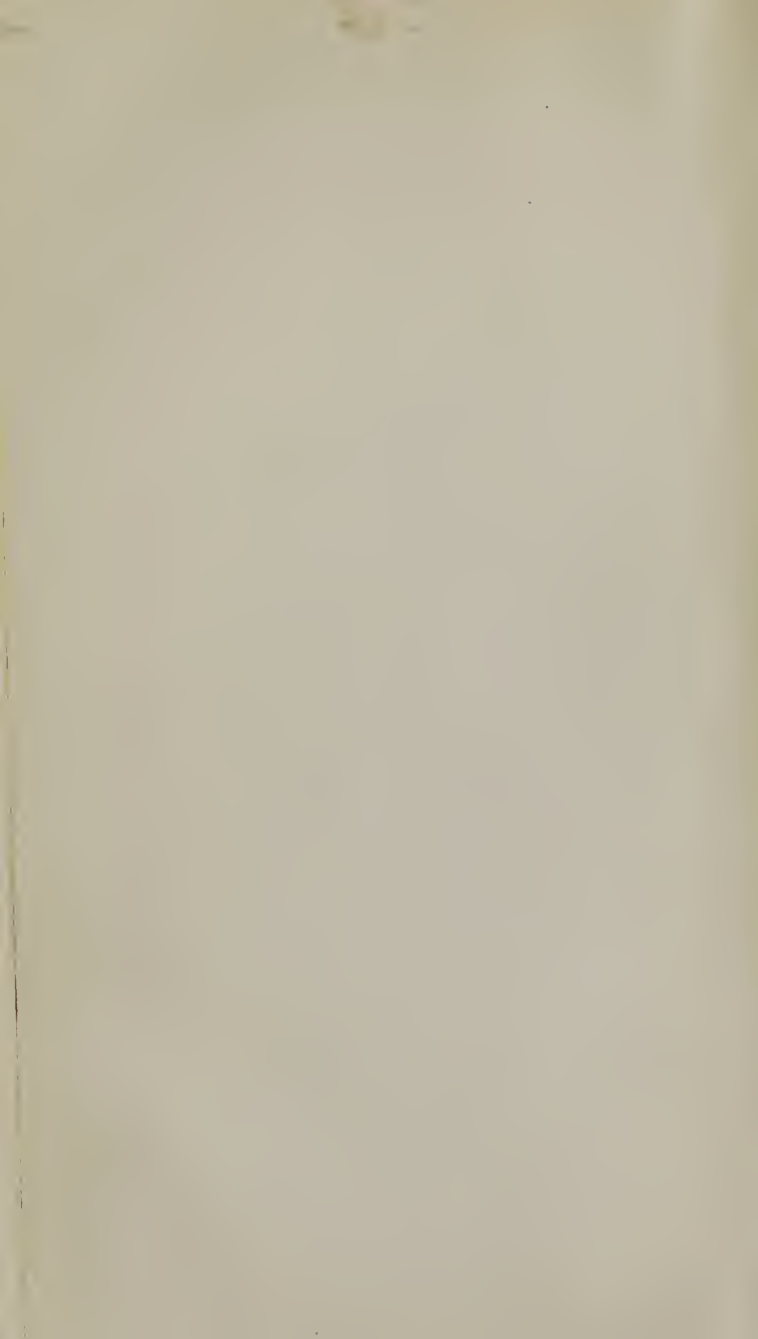


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John Mendenhall
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SELECT DISCOURSES
ON THE
FUNCTIONS
OF THE
NERVOUS SYSTEM,
IN OPPOSITION TO
PHRENOLOGY,
MATERIALISM, AND ATHEISM,
TO WHICH IS PREFIXED A
LECTURE ON THE DIVERSITIES
OF THE
HUMAN CHARACTER,
ARISING FROM PHYSIOLOGICAL PECULIARITIES.

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By JOHN AUGUSTINE SMITH, M. D.

MEMBER OF THE ROYAL COLLEGE OF SURGEONS, LONDON, PRESIDENT
OF THE COLLEGE OF PHYSICIANS AND SURGEONS FOR THE UNIVERSITY
OF THE STATE OF NEW YORK, AND PROFESSOR OF PHYSIOLOGY
IN THAT INSTITUTION.

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ADVERTISEMENT.

THAT our virtues and our vices are, in a great measure, constitutional, every observer of mankind must have remarked. To throw some light on this curious phenomenon, is the object of the ensuing discourse. In perusing it, the reader will, I fear, charge me with being less cautious in the formation of my own theories, than I have been rigid in scrutinising the speculations of others. Such an allegation it is not for me to controvert. Believing my opinions to a certain extent just, and ignorant of the limits which should be affixed to them, I would remind those who may be disposed to agree with me, that negative errors are commonly less dangerous, than positive blunders. Where consequently, the hazard, on either hand, appears equal, it were better to refrain from what *may* be true, rather than to plunge into what is more probably false, and more frequently pernicious.



P R E F A C E .

THE LYCEUM OF NATURAL HISTORY in this city, an Institution of greater merit than resources, requiring pecuniary aid, the following Discourses were, with the exception of the first, delivered for its benefit. They form a part of the Course annually attended by the Students of the College of Physicians and Surgeons, and being adapted to a general audience, were received with favor. Recourse has now been had to the press, in the hope that a perusal of the Lectures may gratify some lovers of science, by whom they could not be heard.

On several occasions slight repetitions occur. They have been introduced, rather than interrupt the train of reasoning, or distract the attention of the reader, by referring to what is elsewhere stated.

Having been led, by the nature of my subject, to touch upon topics heretofore discussed with much acrimony, it is not probable I shall escape animadversion. Yet harshness of expression neither refutes what may be erroneous, nor enforces what is true ; while truth—truth in the end—through truth in the means, constitutes, as far as I am aware, the object of my invariable pursuit. Should I therefore have inadvertently advanced a false principle—a mistaken fact, or a sophistical argument, the circumstance, upon being proved, shall be thankfully admitted, and the unconscious error immediately amended. Nor will these acknowledgements be made the less readily, although the taste of my friendly critic should induce him to embellish his corrections with “ the particular species of rhetoric, which,” if the wit of Mr. Addison may be trusted, “ distinguishes, beyond any other part of her Majesty’s dominions, that portion of the British metropolis, where they speak the plainest English—and *sell the freshest fish.*”



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A LECTURE
ON THE
DIVERSITIES OF THE HUMAN CHARACTER,
ARISING FROM PHYSIOLOGICAL
PECULIARITIES.

SECOND EDITION.

"I have seen men so formed by *nature* that they could bear a
bastinadoing, better than I could a fillip of the finger."
Montaigne in his Essays.



LECTURE, &c.

GENTLEMEN,

UNQUESTIONABLY the most remarkable phenomenon which the study of mankind presents to the contemplation of the philosopher, is the fact, that of the myriads of human beings who inhabit this earth, no two can be found precisely alike. Conforming to the same general type,* there is yet something in the character, propensities or habits of every individual, that marks and distinguishes him from his fellow-men.

Lady Mary Wortley Montague indeed observes that, "in all her travels she had seen but men and women."† If her ladyship intended by this, that in Constantinople as in London, courtiers love power and place, and seek

* The law of our moral nature is extended to our physical construction. The few features composing the human countenance admit of endless variations—a circumstance with which any person may occupy and amuse himself when mixing in a crowd.

Would not a sagacious dog distinguish his master among the congregated inhabitants of the earth? Yet the secretion which directs the animal, for he judges by the nose and not the eye, consists of only four elements at the most. Can these alone be thus infinitely diversified and combined?

† On this occasion, as on most others, to generalize is sufficiently easy—the difficulty lies in discrimination.

them by intrigue—nay, if she meant that the race every where enjoys pleasure and eschews pain, she was doubtless right. But if she wished to be understood as declaring, that Turks and Englishmen do not differ materially—that men are not greatly unlike, she was as certainly wrong.

But whence can this wonderful diversity proceed ? Naturalists tell us, that although man was designed by nature to inhabit every region, from the frigid to the torrid zone, yet climate greatly affects him as well as all other animals subjected to its influence for a series of generations ; and that the feeble and relaxed Hindoo must necessarily differ materially from the hardy trapper of the Rocky Mountains.

Metaphysicians contend that the human mind at the period of birth, is like a smooth mass of ductile wax, void of character and shape, but capable of receiving any impressions which may be made upon it—that these impressions will consequently be either good or bad, uniform or discordant, according to the skill or ignorance of those intrusted with their formation. That man, in short, is the child of accident, the creature of circumstance, and is virtuous or vicious, great or insignificant, as fortune may have smiled or frowned upon his birth.

Political writers, admitting the argument of the metaphysicians, assert, that of all the circumstances which give a stamp to the human character, civil institutions, and manners and customs which depend upon them, are the most important. That it is impossible there should be any similarity between the vagrant tribes of the desert, and the over-refined inhabitants of London and Paris

—between the crouching slave of the east, and the independent citizen of the west.

The effect of climate upon mankind, I do not propose now to consider, but shall content myself with observing, that its action upon the mind must be through the medium of the body.

If the mind were originally as unformed as some metaphysicians suppose, and if all impressions made upon it, or in other words, all our ideas are derived exclusively from the senses, it would seem to follow that the intellect of man and other animals, should be in proportion to the perfection of these senses. But this is by no means the case, for we are exceeded in at least three of the five by many animals, nor is there one of these inlets of knowledge in which we are not surpassed by some of the inferior orders of creation. The contemptible leather-wing-bat for instance, excels us in the two most important, the senses of seeing and feeling being in this animal far more exquisite than in us. Moreover, although men differ more in their intellectual powers than in their physical strength; yet except in some rare instances of deformity or defect, we all see, hear, taste, feel and smell equally well. Lastly, it frequently happens, that our senses, in consequence of disease, acquire an extraordinary degree of acuteness. This occurs in Hysteria, which is so far from being followed by an increase of intellectual power, that, with augmented physical sensibility, the mind is obviously and notoriously weakened.

But all the considerations urged by these several classes of reasoners, are inadequate to explain whence

it happens, that persons born in the same climate, brought up by the same tutors, living under the same government, parental and political—in short, placed, as far as possible, under precisely the same circumstances, should be found to differ so uniformly, and occasionally so widely in their characters and dispositions. Let us then call the science of Physiology to our aid, and see whether that will not enable us, if not to solve the problem, at least to make some approximation to a solution. In the following discourse therefore, I mean to show in what manner peculiarities in our corporeal functions affect the Moral Character.

Such an inquiry, gentlemen, is beset with difficulties so formidable, that many of you, I fear, consider them insuperable. For in the first place, it must be admitted, that we are entirely ignorant in what way mind and matter act upon each other. Secondly, as according to my system, every thing must depend upon the manner in which the several organs of the body execute their offices, what those offices are should be well understood. But none of them are seen, and not a few remain unknown. This, however, only proves that our knowledge of the human frame is not so complete as could be wished. Yet the freaks of nature, disease, accident and experiment, have supplied numerous facts, which may be made to bear upon our inquiry. Every man's own experience must indeed, upon this point, have furnished him with more or less of instruction. Who, for instance, has not felt the fretfulness and impatience which arise from long fasting, and then enjoyed the kindly and beneficent sensations

produced by a good dinner and a cheerful glass of wine? But, independently of frequent or petty variations, every person, at all observant, must have remarked those great and permanent alterations, which gradually take place in his acquaintances and in himself. The ancients were so convinced of this, that they supposed a change to occur every seven years. These they denominated the climacterics, and they fixed upon the number 7 probably from their superstitious veneration for odd numbers. For the same reason they considered 63, that is, 9 times 7, as the grand climacteric.

Such a division is much too artificial to be correct; but it is evident there are three periods of our existence at which considerable revolutions are effected in our characters. The first of these is accomplished in males about the age of sixteen. In females it takes place sooner—in both, earlier or later according to the forwardness of the person.

Twenty-one years is fixed upon by our laws as the second term. But this I think too early, and twenty-five I should state as the age at which the human faculties arrive at perfection. The third and last change commences about forty, and prepares us for the final termination which awaits all animated nature.

The first of these revolutions is much more obvious than either of the others, particularly the last, which disease frequently accelerates, and death as often precludes. The first, too, is accompanied by external signs which sufficiently mark it, but the last are known only by their effects. They all take place gradually, however, because the organs which produce them come

slowly into action, and acquire by almost imperceptible degrees their influence in the system. Were it otherwise, were the blood for instance, to be suddenly diverted from the brain to the lungs, they would be unable to withstand the shock, and disease or death would frequently be the consequence. Such an effect does occasionally take place, and is vulgarly expressed by saying "such a person grows too fast."

Were the several organs of the body to retain the same relative influence in manhood as in childhood, then would men "be but children of a larger growth." And this does sometimes happen. For if those parts of the body which I shall presently point out as destined to change our dispositions, be not called into action, the person actually does retain through life, whatsoever his bulk, the peculiarities of childhood.

What then are the organs which produce such great alterations in us, and consequently so powerfully influence our characters? They are the brain, the lungs, the liver, and the sexual organs. These are the principal, and to these my observations will be chiefly directed, although others must be incidentally noticed. For in a machine so complicated as the human body, where all the parts are intimately connected and mutually dependent, each must necessarily affect the others, and thus modify the ultimate result in proportion to its own importance in the general scale. But the forces which many of the minor parts exert are not yet sufficiently ascertained to be appreciated. Future observation may detect them, and they will then be applied by

the genius of a medical Laplace, to the solution of many of the supposed paradoxes which now mark the race.

It being a well established principle in the animal economy, that the effect which any organ produces in the body is in the compound ratio of its relative bulk and the quantity of aeriated* blood which it may receive, I shall first point out the condition of the several important parts above mentioned, with regard to these two particulars,† and show how changes in them, with respect to these circumstances, do actually produce the moral revolutions before mentioned. I shall then prove that it is upon the completeness of these changes, or in other words, upon the influence which the one or other of these parts may ultimately acquire and maintain in the system, that the character of the individual greatly depends. But these circumstances must necessarily vary, at different times, in the same person, and never can be exactly alike in any two individuals; hence we see at once the cause not only of the endless diversity among

* This term I am aware is not in Johnson, but we require a word to express, free from all hypothetical notions, the fact, that the air exerts a peculiar effect upon the blood. The law adverted to is more specifically stated in a subsequent discourse, there being no need, for the present, of greater precision.

† The latter of these circumstances, is much the more important of the two, and hence, many apparent anomalies are readily explained. Thus sanguine tempers and straitened lungs often co-exist; while on the other hand, full chests are occasionally united with dull, or even hypochondriacal dispositions. In the former cases, however, the intensity of the pulmonic circulation threatens phthisis, and not unfrequently produces the disease.

men, but why the same specimen of humanity differs occasionally so widely from himself. Now revelling in all the confidence of success, and anon enduring all the horrors of despair—his actual prospects remaining, the while, entirely unaltered, and the only change experienced being, that more or less blood has been determined to this or that region of his body!

In children then, to begin with them, the sexual organs, receiving no more blood than is necessary for their support, are passive. The liver is large, but with a languid circulation—the bile which it pours out, though abundant, being thin and watery, which shows the action of the gland to be imperfect. The lungs merely enable the blood to go through the changes which are necessary for the support of life. The overwhelming power of the brain now annihilates that of every other part. This influence it derives, first, from its bulk, for it has three or four times the relative size in children which it has in adults. And secondly, from the rapidity of its circulation—the pulse beating nearly one-fourth faster now than in the later periods of life. The arteries also are at this time much more numerous and much more active—hence the great heat of children, which serves as a constant stimulus to their vascular and nervous systems.

Such being very generally the peculiarities in the anatomical structure of children, much greater uniformity of character is to be expected, and (whatever the partiality of parents may induce them to think to the contrary), is actually observable among them, than among

adults.* As their muscles are perpetually stimulated into action by an excess of nervous energy, children must be for ever in motion. The same excess renders them so excessively irritable, that derangements which in adults produce little or no sensation, (as tickling or acrid matters in the bowels,) in them bring on convulsions. Their irritability renders them passionate, but their passions, like all their other emotions, are of short duration. From the same cause they are strongly acted upon by every object which strikes their senses, and each in its turn effaces all former impressions. Hence, though violent, they are placable; though ardent, versatile; and though warm, unsteady in their attachments.

The brain and tongue being equally affected, a perpetual train of ideas passes through the former, to which the latter as incessantly gives utterance. As one train of thought can never keep possession of the sensorium for any length of time, children are incapable of much reflection. Fully occupied with the affair of the moment, they are little tormented with hopes and fears about to-morrow. Confident rather than sanguine, they are entirely exempt from hypochondria. A sense of weakness, usually renders them timorous.

* A curious difference, depending upon the sex of children, has been observed by Dupuytren. Coaxing and praise have, he says, a great effect in inducing little girls to submit at a very early age to disagreeable or painful operations; whereas all imaginable fine phrases, are, under similar circumstances, lost upon boys.

Such are the characteristics of children, when healthy, and such the causes. When puny and delicate, they frequently exhibit marks of premature intelligence, particularly as regards observation and reflection, and people remark, "What a pity it is so sensible a child should be so sickly." But we now see that it is to this very feebleness of body that such children are indebted for their superiority. For the circulation in the brain being thereby rendered feeble, that viscus, as in the adult, is more upon a par with the rest of the system. Should the health of such children be restored, with their returning vigor the brain resumes its wonted superiority, and quickly destroys their pretensions to unusual intellectual powers. But should this not be the case, and should the precocity be very remarkable, such children are like unsound fruits, which exhibit the earliest signs of ripeness, but never arrive at maturity—an early death too often blasting the ill-founded hopes which such cases have inspired.

As soon as the brain acquires its full and proper size, which it does very early in life, the blood is determined to other organs. Thus as we advance in years, the cerebral influence gradually diminishes, until in some instances, no more of it remains than is barely sufficient to carry on the operations of the animal economy. Occasionally, however, the power of this viscus continues through life too great, (although it is always more or less modified by that of some other part.) Persons thus circumstanced, are distinguished by many of the characteristics of children. They are restless, captious, irascible and violent. Ready to engage in any pursuit,

and always eager, but easily diverted from one object to another. Perpetually tormented by a desire to be in action, they are always in full chase, but like unbroken dogs, they pursue feathers and shadows as keenly as the most substantial game. Of gratitude they are incapable, and of friendship they know only the name. Their animosities, though more real, are sometimes equally transitory, for the interest of the moment regulates all. They are so credulous as to be duped by every designing knave, and are not, in general, remarkable for courage, either active or passive. Such are the effects of great permanent excitement in the brain; should the stimulation go beyond this, mania is the consequence.

That an undue determination of blood to the head does produce the moral effects which I have mentioned, I think we have complete and absolute proofs from experiments which, unfortunately, are much too frequently repeated in our own country. Alcohol, in whatever form it is taken, accelerates the cerebral circulation, and thus gives a temporary supremacy to the brain. The resulting effects are so precisely those which I have attributed to that state of the system, that I confess nothing, it appears to me, can be more decisive.

At about sixteen years of age, the head no longer requiring so large a supply of blood, this fluid is gradually diverted to the chest and sexual organs. The former of these then begins to expand—the lungs have thus a freer motion, and the blood is more completely aëriated. The pulse beats slower, but fuller and stronger; the muscles become firmer in their texture, and more energetic in their action and all the func-

tions of the animal economy are performed with increased facility and vigor.

The sexual organs are now roused from their torpor, the voice in males becomes hoarse, the thyroid cartilage projects. Hair makes its appearance on the chin and other parts of the body, and the breasts, more particularly in females, are tumefied.

These are the physical changes which take place at this period : their moral effects are no less remarkable. For now the imagination just called, if not into existence, at least into more vivid action, spreads a fairy-land before us, over which nascent hope, like a prism, sheds an alluring, but deceptive glare. Delighted with the new and ecstatic sensations which now thrill through every fibre, we hug them to our bosoms, and fondly persuade ourselves that we embrace realities. In females more particularly, these illusions are sometimes so strong, that the spell is not broken until their happiness is irretrievably ruined, by an imprudent marriage, or a still more disastrous step. Even in our own sex, whose firmer nerves are less easily excited, there are few of us so cold-blooded at this period of our lives, as not to lay schemes of happiness which can never be realized. And in the evening of our days, when our feelings are sobered by time, or as too often happens, soured by misfortune, we look back with mingled emotions of surprise and regret upon those dreams of the morning—wonder at our own folly, and according to our dispositions, either rail at the rising generation, or smile upon it in pity, for participating in similar delusions.

Such are the effects produced by the organs under consideration, when their action is too intense. But the reverse of this may happen, and the motion of the blood in the lungs may continue through life, too slow and languid. When this occurs, and when no particular determination of that fluid takes place to any other part of the body—when you have combined with this state of the circulation, full chests and stout frames, muscles large but flabby, skins loose and covering quantities of fat resembling blubber, countenances heavy, eyes inanimate, and motions listless, the following is the moral character of the person. His appetites are grovelling, his disposition cold, sordid, and selfish. Of love he is incapable, and marriage is a matter of convenience or calculation. Alike insensible to mental disquietudes or bodily ills, he suffers misfortunes without complaining, and pain, if it be slight, without wineing. Devoid of fortitude and of courage, to induce him to fight, his circulation must be quickened, and valor thus excited, is usually called—Dutch courage.

A little more energy in the lungs combined with muscles unbraeced, but not flaccid, a fat, abundant, but not excessive, soft, but not gelatinous, produces your good sort of good-natured—I had almost said good-for-nothing people. The dispositions of such persons are mild, amiable, and contented. They take little part in the bustle of the crowd, satisfied with their lot whatever it may be. As they make no exertion to maintain the station in which fortune may have placed them, they are apt to be elbowed out by the more pushing, and usually leave the world worse than they came into it. They

are capable, however, when strongly excited, of great temporary exertion. But the effort over, they relapse into their former indolence. As all their appetites are moderate, they are usually correct in their conduct if left to themselves; but having little firmness, (although by no means deficient in courage), they are easily persuaded to engage in schemes of which they do not approve, and to participate in vices for which they have no relish.

Give the lungs yet more power, superadd considerable activity in the cerebral circulation, combine with these, firm and vigorous muscles, unencumbered with fat, and the following are the characteristics of such persons:—They are bold, restless, and irascible; warm friends, or violent enemies; but their attachments are more durable than their animosities. Scorning dissimulation, and incapable of bearing malice, reconciliation with or without a battle soon ends their quarrels. They are brave in the extreme, partly because to whatsoever danger they may be exposed, no injury is apprehended.*

But the courage of such persons is apt to degenerate into rashness, for in truth, they are on no occasion much given to deliberating, but dash on, confident of success and heedless of consequences.†

* The celebrated Earl of Peterborough, who was, I believe, as brave a man as ever lived, used to say, that convince him that he did actually run a risk of being killed, and he would be as great a coward as any body.

† A very curious circumstance is to be observed with regard to these persons, that though possessed of courage in so remarkable

As their passions and propensities are always strong, their moral habits are rarely correct. Perpetually urged on by their warm and generous feelings, and acting always from the impulse of the moment, they are frequently hurried into little improprieties, which the bulk of mankind, avoiding without difficulty, laugh at without mercy. Persons of this temperament, are ill adapted for the ordinary routine of life, for they are very generally thoughtless, erratic, and extravagant. Of all others, they require the strictest discipline, to which, however, they are not at all disposed to submit. But it is all-important to them that their minds should take the proper direction; for right or wrong, they rush on with equal ardor and impetuosity, and either plunge into the

a degree, they have very little passive resolution, and of all others, bear worst the knife of the surgeon. The late Mr. Birch of London, told me that having occasion to perform some slight operation on Belcher, he observed with surprise, how ill he bore it. This celebrated pugilist was, in all probability, of the temperament I am now describing, for he was a man of great intrepidity. It is in all likelihood, from the same cause that the Irish, though perhaps individually, the bravest people in Europe, are so notorious for their unmanly complaints when on the operation-table. The moment the knife touches them, they “cry out murder with a yelping note,” as every attendant of the London Hospitals must have witnessed.

The French on the contrary, I know not why, are as remarkable for their resolution. A Portuguese surgeon once said to me, “That a person might, at his ease, cut a Frenchman for the stone.” Females have been long and justly celebrated for their superior fortitude, both mental and corporeal—but of this in a subsequent discourse.

most degrading vices, or soar to the highest excellence of which our nature is capable.

Next to these come those in whom the action of the lungs is unmodified by the influence of the brain. Sanguineness of disposition, without energy of character or vigor of intellect, distinguishes such persons. Of all human beings, they seem to me to be the happiest. Perpetually engaged in some pursuit to which they are enthusiastically devoted, they pass their lives, confident that they are on the eve of attaining the object of their wishes. They are never damped by disappointment; but if foiled for the hundredth time, they begin anew with redoubled ardor, convinced that they have discovered the cause of their former failures, and that *now* they shall certainly succeed. No matter how frivolous the rest of the world may consider their schemes, they themselves esteem them of great importance; and whether they are collecting shells, stones, flowers, or insects, they are as much in earnest, as if engaged in the most profound and useful inquiries. Their confidence of ultimate success gives them great advantages over philosophers, who have usually much of distrust mingled with their hopes. Doubt, these speculators never know. Is wealth their object? however poverty stricken in reality, the mines of Potosi are ever present to their view, and as they think, just within their grasp. Is celebrity their aim? however contemned by the present generation, posterity they are sure, will more justly appreciate their merit, and award them the exalted niche in the temple of fame, so certainly their due. Occasionally, these persons are versatile in their schemes,

and if agriculturists, one year they are to make a fortune by turnips, another by potatoes, a third by clover, and so on. If at any time you tax them with these inconsistencies, they will tell you "it is very true, all their lives they have been mistaken until now—but at last they are right."

Should they become devoted to one object, and should this be, as it usually is, unattainable, such as perpetual motion, transmutation of metals, &c., they frequently fall into mental derangement. To this, indeed, the excessive action in their lungs always predisposes them, and should this action be from any cause much augmented, fatuity at least, upon certain subjects, is the inevitable consequence. This unfortunately, too frequently happens, even in those who have not had the original predisposition. Such is the condition of persons affected with consumption, whose hopes of recovery are always in proportion to the ravages of the disease. When the determination of blood to the lungs is slight, that is, at the commencement of the complaint, phthisical patients judge rightly of their situation, and are aware of their danger. But let the disease become fixed, and as it advances, that is, in proportion to the intensity of the action of the lungs, do their fears diminish, and conviction of ultimate recovery increases, until the very day which, in their estimation, is to restore their health, puts a period to their existence!*

* In most cases of consumption, the liver partakes somewhat of the disease, and hence, we generally have alternations of slight despondency and undoubting confidence. But there is one

Although from the dreadful frequency of phthisis, probably every person who hears me has seen such instances ; but Mr. (now Sir Astley) Cooper, used to relate one in his lectures, which is so perfectly apposite, that I will mention it :—A physician in London, who was a lecturer on the Practice of Physic, and had frequently warned his pupils of this peculiarity in consumptive patients, became himself the subject of the disease. But now, he was no more conscious of his situation, than those had been, for whom he formerly prescribed. Having been persuaded by his friends to retire into the country, on the very morning of his death, he told his wife that it was his intention to return to town that day, in order to proceed with his lectures, and show his friends how groundless their fears had been, and how firmly his health was established.*

variety of the complaint, in which the biliary system partakes equally with the pulmonic ; and by these, the doctrine of the text is strikingly and lamentably verified. The deepest gloom, relieved by only transient gleams of hope, is the prevailing temper of the patient's mind. Two of the most distressing examples of horror at the thoughts of death, which have come to my knowledge, occurred under such circumstances. The victims were ladies of exemplary propriety and worth, and in one of them, at least, there was no want of religious impressions.

* A very near relative, for phthisis is unfortunately a family complaint, had been frequently and solemnly warned by me, to use every precaution lest he should die of consumption. Disregarding my advice, he paid the penalty of his negligence. Not long before his death, to convince me that my apprehensions were needless, he bared his arm, saying, " See, Doctor, how I have fattened." So emaciated was the limb, I could nearly have used it in a demonstration of the bones !

Nothing can afford a more complete illustration of the effects produced upon the system by increased action in the lungs, than such a case. But we have other proofs. Every person must have felt in close foggy weather, when the air is almost unfit for respiration, how heavy and listless he is ; but let a change take place, let his lungs be stimulated by a clear elastic air, his imagination immediately brightens up, and all his faculties seem renovated.

Another strong proof of the correctness of the preceding opinions is furnished by children affected with the croup or hives. The first symptom of this disease is an uncommon brilliancy of the countenance, the eyes seem perfectly to illuminate it, and the child is most unusually playful. All these are the effects of the increased determination of blood to the lungs, and they last until the complaint is either removed or becomes suffocating.

I cannot leave the organs of the chest, without noticing, that mankind have, by nearly universal consent, attributed certain qualities to the heart.* Thus we say, that persons have good, bad, affectionate, or hard hearts, as the case may be. The passions have certainly great influence over the heart, for when violent and long continued, they frequently produce death, by causing diseases in it—a fact for which we are indebted to the mournful events of the French revolution. But there

* The Jews ascribed certain mental affections to a locality below the heart. Hence the expressions, the yearning of the bowels—Have you no bowels of compassion ? In point of fact, particular emotions of the mind, do cause a sensation in the part indicated by such phraseology.

are no circumstances within my knowledge, to induce a belief that the heart has any agency in determining the character of the person, further than by hurrying or retarding the circulation.

Intimately connected with the lungs, and co-operating with them in producing the effects which I have mentioned, are the sexual organs. The extent of their agency is more easily ascertained than that of any of the other important parts of the body, because they are frequently removed in our sex before they come into action at all, and sometimes after that event. In this way, it has been proved, that man is indebted for his hoarse voice, and his beard to the stimulating fluid which these organs secrete, and pour into the general circulation. The same cause thickens, as is well known, the necks of some of the inferior animals. To some of them, as well as to men, it imparts a strong disagreeable odour, and renders them fierce and intractable. To this source, is to be traced the most ungovernable passion, to which we are subject; for, to this fluid, love, however refined or sublimated, owes its existence.* A singular case, demonstrative of this, occurred a few years ago, in London. A female child was born there, to all appearance resembling other girls; but when she arrived at the age of puberty, no change whatever took place, and she continued to grow on, without showing the least signs of womanhood. Of love, she had no more idea than a blind person has of colours. A sister being

* Love and lust, must, however, by no means be confounded. They are not only unlike, but frequently in direct contrast.

married, she could not conceive her motive for so doing, and wondered particularly, at her preference for a male bed-fellow. Upon dissection, after death, she was found to want those two little bodies, termed by anatomists ovaria.

The action of the sexual system, seems to depend very much upon that of the pulmonary organs. Hence consumptive women are so apt to conceive, and hence also, persons of sanguine temperaments are by far the most susceptible of love. The disposition to this passion, however, becomes weakened early in life, and after twenty-five or thirty, we are tolerably exempt from its violent freaks. For about this time, the blood begins to take a new determination; and consequently, those tumultuous emotions which have for several years, agitated the system, gradually subside. Other propensities ultimately succeed, but there is generally, a well marked interval, which separates the irregular and ungovernable desires of youth, from the more moderate and steady pursuits of maturer years. This calm, the vulgar express, (for it is so obvious in some instances, that even the vulgar notice it,) by saying, "Such a person has sown his wild oats;" meaning, the person has seen his folly, and intends to amend his conduct. This change, to all appearance, a moral one merely, is at least, as much corporeal as mental. For every part of the body, now fully grown, receives its just proportion of blood. And it is to be particularly noted, that during this period of our lives only, is this fluid equably diffused through the system. So long as this

state of things continues, though all the passions, are strong, no one may predominate.

But this exact equilibrium cannot last for any length of time, and is speedily destroyed by accident or disease. Independently, however, of fortuitous causes, between thirty-five and forty* the blood is gradually diverted from the chest, the larger arterial trunks grow rigid, and many of the smaller twigs are obliterated. The heart now acts with diminished force and frequency, and the nerves lose their excitability. The brain of course receives less blood, and obeys fewer impressions. There is, consequently, no longer the same rapid succession of ideas, and accordingly at this age, we begin to evince more pertinacity of opinion, and greater steadiness of purpose.†

Another very important change marks the period of life we are now considering. The superiority which the arteries have heretofore enjoyed, is now transferred to the veins; or, in the language of the schools, a venous plethora henceforward prevails. Thus while the influence of the other parts of the body is decreasing, that of the liver is augmenting—they being supplied with blood exclusively by arteries, while this, the largest gland in the body, is principally furnished by a vein.

* It may now be readily understood why consumptions are so rare before fifteen, and after thirty-five.

† The reasons stated in the text account, in part, very satisfactorily, I think, for the well known aversion of elderly persons to alter their opinions. Whether the brain itself undergoes any change, in consequence of which it falls with less facility into *new trains of action*, is more than I can say.

Hence it is that despondency, timidity, and distrust, are so frequently the accompaniments of age.

That the gloomy and depressing passions arise from affections of the liver and spleen, the very name hypochondria implies ; and modern observation confirms the fact upon which the ancients founded the denomination. In many persons, from disease or original conformation, the power of the liver is antedated, and the disposition which ought to be peculiar to advanced years, is found frequently in the second, though rarely in the first period of life.

Where the influence of this viscus is considerable, but not very great, where there is combined with it, adequate vigour in the cerebral circulation, muscles plump, but without superfluous fat ; a countenance neither sallow nor ruddy, but a compound of both ; the following are the principal features of a person's character who is thus constituted. He is cold, cautious and calculating. Correct in his moral habits, partly because he is little tempted to be otherwise. None of his passions are easily excited, and all, with the exception of anger, are under good control ; but when roused he is violent, and once thoroughly offended, the same tomb receives his animosities and his ashes.

To quickness* of intellect he has no pretensions, but

* There are two sources of error in judging of the rapidity with which men arrive at conclusions, against which we must be on our guard.

First, persons of genius, reflecting deeply, and at their leisure, upon the future, may frequently anticipate, every possible contin-

an idea once fixed in his mind is nearly indelible ; his memory, of course, is strong. He has great perseverance, or even obstinacy, in pursuing whatever he undertakes ; but engages in nothing without due consideration. His temper is suspicious, and in all his transactions, he trusts no one further than he is obliged ; in addition to this, feeling few or no attachments himself, he neither believes in friendship, nor possesses, friends. His conduct through life is governed by long-sighted views of interest, and he is either patriot or slave, republican or royalist, as he conceives most conducive to his interest. Convince him that it is proper he should expose his life, and he will do so ; but he has not that inherent love of fighting which so frequently accompanies the sanguine temperament. Persons of the latter disposition answer better for soldiers, but those of the former, (when they have the requisite strength of mind,) make the best officers, for they are cool and collected, careful

agency, and thus instantly perceive and to the surprise of the spectators, immediately apply the proper remedy, where something unforeseen by these, has occurred. This I conceive to have been much the case with Napoleon, whose temperament was not by nature prompt. But where an event really unexpected happens to people of this description, they are apt to be at a greater loss, than those more in the habit of devising expedients, upon the spur of the moment.

Secondly, individuals in the habit of generalising their principles of thought and action, can often, as if by inspiration, deduce a correct inference on a sudden emergency. But here, as with the persons first mentioned, the slow labor of investigation, although after a different manner, had been secretly and previously performed.

to avoid mistakes themselves, and ready to take advantage of those of their adversaries.

Give the liver the same degree of influence, but deprive the brain of its power, the skin of its blood, the muscles of their plumpness and their fat, and you form the most contemptible being that inhabits this earth. He is poor, weak, mean, and malicious; devoid of every noble sentiment—of every generous feeling. Envious of those by whom he thinks his interests are thwarted, from under some covert (for such persons are universally cowards,) he darts his tiny weapon at the object of his hatred. But he has neither skill to direct, nor strength to give it force, and but for the gall with which it is tipped, it would fall, harmless, to the ground. As it is, the skin is raised, and a slight smart is the consequence. This might tempt you in the irritation of the moment, to crush the miserable insect if within your reach—but if it escape at the time, why let it go—its own malignity will be its best punishment.

Next come those in whom the action is intense, in both the brain and the liver. This state of the circulation forms men of strong minds and gloomy imaginations, who are incapable of enjoying present good, for fear of approaching evil. Such a man was the celebrated Cowper. When this temperament is very exquisite, the unhappy objects are always upon the verge of insanity; with which, like the unfortunate person just mentioned, they frequently become affected.

Where the strong action in the liver is unmodified by that of the brain, the person is one of your ordinary hypochondriacs, who is tormented with a thousand ridicu-

lous fears and fancies, which have no foundation except in his own imagination.

Occasionally we meet with undue excitability of the nervous system, and, more rarely, prodigiously large and powerful muscles. In the former the mind is sensitive, in the latter dull, and in both feeble.

Lastly, come those happy mortals in whom every part of the body performs its appropriate office in healthful exactitude. This condition of the organs and the circulation, not more inestimable than rare, constitutes the tempered temperament of the ancients. One example of it, and one only, has fallen under my observation in a high legal functionary, now no more. He was neither rash, nor timid—no sceptic and no enthusiast—not avaricious, nor profuse. But there was in his mind, a dash of sanguineness, which tinted the future with gayer hues, than cold philosophy would at all times warrant. But, with this single exception, every element seemed to be combined into one harmonious whole, conferring the greatest amount of rational felicity, it has ever been my lot to contemplate; thus proving, “That happiness like virtue, is equally removed from all extremes.”

I have thus gentlemen traced to diversities in the physical constitution of men, many of the differences by which their characters are marked. In showing this dependence of the intellectual upon the physical character, care has been taken to avoid minute details, for, in disquisitions of this description, an excess of refinement is always fatal. Lest, therefore, I might be thought fanciful, I have adhered to general views, and strongly marked examples, leaving in a great degree, to others,

the particular application of the principles which have been established. These admit of endless modifications, and lead to the most interesting conclusions, with one of which, however, I shall content myself.—In training the mind to religion and virtue, no pains should be spared, because much may be accomplished. But if our efforts fail, and sometimes fail they will, however well directed, we may console ourselves with the reflection, that moral causes can not always either supply deficiencies, or control aberrations, resulting from the physiological peculiarities of our corporeal functions.

SELECT DISCOURSES
ON THE
FUNCTIONS
OF THE
NERVOUS SYSTEM, &c.



DISCOURSE THE FIRST.

GENTLEMEN,

To the Nervous System are we primarily indebted for our belief in the reality of matter, and for the knowledge of our own existence. Nor does the revelation of the external world to us, and of us to ourselves, constitute the only obligations we owe to that mysterious portion of our physical structure. For the will exercises its control through nervous agency; while the same power, pours into the mind during our waking hours, a perpetual stream of intelligence, lending, moreover, its aid in the elaboration of remoter and sublimer thoughts. Finally, to crown the whole, in the nervous centre dwells the *Principle of Life*.

Such, gentlemen, is the system and its offices, of which it is my design to speak. In doing so care will nevertheless, be taken that you suffer no annoyance, by the introduction of a superfluity of minute details from Anatomy, or Physiology. Since to neither science, shall a reference be made, further than may be necessary for your ready comprehension of the remarks which I propose to offer. Yet in these, I am concerned to add, you are to anticipate no strange or surprising novelties. Originality, indeed, after the manner of many who

call themselves theorists, being sufficiently easy, is doubtless within the scope of my abilities. But to enunciate and establish many propositions, which are at the same time new, true, and valuable, falls to the lot of none, save the favored few, and among them, I have no pretensions to be ranked. My humbler aim will, therefore, be rather the refutation of a few errors, and more particularly the enforcement of some truths, very generally admitted, although not universally acquiesced in with the entire and unvarying repose required by our virtue, and indispensable to our happiness.

The system which *gives occasion* to such momentous results, is composed of the Brain, the Spinal Marrow and the Nerves. The first of these consists of two portions, very unequal in point of size. The superior and larger of these portions, is called the *cerebrum*. That which is smaller and inferior, is denominated the *cerebellum*. The former weighs, on an average, 36 ounces, apothecaries weight; the latter, a little exceeds 5 ounces.

The spinal marrow, of which the *Medulla Oblongata* may be considered a continuation, resembles the brain in character, and is the well known prolongation extending into the canal formed by the bones of the back.* The upper part of this chord, as it is commonly termed, is longitudinally furrowed by at least six superficial grooves. Of which, the two lateral and the two rectan-

* This chain, together with its contents, forms the great dividing line between the higher and the lower orders of creation—between the vertebrated and the non-vertebrated animals.

gular to these, are not only the deepest, the last exceeding all the others, in this respect, but they continue the whole length of the column. The remaining fissures, and consequently, the prominences to which they give rise, terminate a little below the neck.

The six medullary tracts, separated from each other in the manner described, form corresponding and elongated eminences. The two anterior of these, are the largest, the two posterior, are next; the remaining two, being not only shorter, as has been already stated, but also the smallest, and the least distinctly marked.

The nerves, for the purposes which we have in view, are most conveniently distinguished as the sentient, the motor, the respiratory, and the digestive. The first, excluding the olfactory, optic, and auditory, are probably all connected with the posterior segments of the spinal marrow. The nerves of the second class, with the exception, possibly, of some of the cephalic trunks, arise from the anterior projections of that substance. Of this, the middle prominences give origin to the last division, or at least, to the 8th (*par vagum*,) the most important pair of the cerebro-spinal nerves, devoted to the aëriation of the blood, and the concoction of the chyle.

To aid in these last important particulars, we find a large anomalous trunk, having little communication with the brain, and termed the Great Sympathetic. That this nerve is principally designed to assist the *par vagum*, is proved by its distribution; what other functions it may discharge, are not known.*

* That the purposes assigned to this nerve in the text, are its

Not intending to enter at large into inquiries connected with respiration and digestion, I shall first dispose of them, so far as they come within our purview ; I shall then discuss, but in an inverted order, the nerves which furnish us with sensations, and those which excite motion.

The change wrought upon the blood by the air, whatever may be its precise nature, is, of all the known processes of the animal economy, the one on which the continuance of life most immediately depends. It is, in truth, to a want of aëriated blood in the brain, that death† is almost uniformly to be ascribed, be the remoter causes of that event what they may. In drowning, this is universally the case, and very commonly so, when a

main, if not its sole duties, is established by the observation of Mekel, who states, that as you descend in creation, the *par vagum* augments in size, and the great sympathetic diminishes in the same proportion, until it disappears.

† The *necessary* cause of death—the inexorable law, which consigns to destruction, all organized structures, animal or vegetable, is this : a continuance of life requires, that the more fluid should circulate through the more solid parts of living substances. Now, from the very moment a separate vitality is established, the latter oppose an ever increasing resistance to the former. The propelling power, it is true, likewise augments to a certain point. Having attained its maximum, however, it gradually declines, until an equilibrium, and with it, death takes place. Very different portions of time are, of course, required for the completion of this process, in different animals and vegetables. The whale is supposed to live 1000 years. To the *Adansonia Digitata*, or Boabab tree, is assigned a period four or five times as long. On the other hand, a few hours suffice to effect all the changes which some animalcules and fungi can undergo.

person is hanged.* Even in decapitation, there is strong reason to suspect, that life ceases from the interruption of respiratory action. Nay, the head of the celebrated Charlotte Cordè,† is said to have been not only alive, but to have evinced intelligence, after its separation from her body, by the guillotine. The tale purports, that the executioner, after performing his office, and while holding the head up to the populace, smote it on the cheek. Whereupon, it is alleged, the eyes of the intrepid enthusiast evinced indignation, and a blush mantled on her countenance.

The story, I acknowledge, partakes largely of the romantic and the marvellous, and is, moreover, not sufficiently authenticated, to command unqualified assent. Yet, to me, it does not appear altogether incredible. Be this, however, as it may, a discussion of the point will enable me to lay before you, some curious information, which could not otherwise be so conveniently introduced. I will, therefore, interrupt for an instant the general tenor of my remarks, for the purpose of communicating, what to many will probably be new.

Observation and experiment prove that our existence is at every moment dependent upon a couple of small eminences, *corpora olivaria*, white as snow, beautifully oval, and about the size of two plump grains of wheat. They form the most salient portions of the middle me-

* I have never met with an instance where suspension either broke, or dislocated the neck; there is, however, a well attested report of its having occurred near Winchester, in Virginia.

† She was executed for killing Marat.

dullary tracts formerly described, are situated *within* the skull, and jut out directly in front, immediately above the junction of the head and neck. These eminences constitute the seat of life. Injury, occurring elsewhere, is more or less tardy,* in accomplishing the work of destruction. But the slightest damage to these two bodies, acts as an instantaneous, and universal extinguisher of vitality. No muscular contraction—no ascertainable pang, marks the transition from life to death. Was there then, any interference with these *corpora olivaria*, in the case of Charlotte Cordè? None certainly. For in decollation by the axe or the guillotine, the spinal-marrow is necessarily severed too far from the head; and Sir Astley Cooper, who attended executions in Paris, during the French Revolution, observed, that there was time for the faces of its victims to evince a feeling of pain, after the executioner had performed his office.

But we have proof positive, that injury to the spinal chord, where it is divided in decapitation, does *not* cause instant death. The evidence is furnished by fractures and dislocations of the neck. They are of frequent occurrence, and when at, or below the point upon which the axe falls, although the spinal chord is not simply incised but crushed, the patient lingers and suffers until destroyed by the black, unchanged blood, sent to his brain. It is certain then, that the life of Charlotte Cordè,

* The time is measured by the number, and duration of the convulsive movements, which precede dissolution, when the result of great violence.

and her consciousness also, continued for a brief space, after the stroke of the guillotine. Let us now see, if she were likely to feel indignation at the insult offered to her, and whether the emotion being felt, she could express it by her features.

In the first place, it is known, that the slayer of Marat, had so entirely conquered the fear of death, as to be more offended at some exposure of her person, preparatory to execution, than at the prospect of being executed. In this state of intense excitement, the fall of the knife, would give little or no pain, and could effect no immediate change in the state of her mind. As, consequently, she had been so sensitive to what was indecorous, before the descent of the instrument, she might readily be, after that event, incensed at a gross indignity.

But, were displeasure felt, could she have shown it? I know of no reason to the contrary, as far as her eyes were concerned. *Their* power must have remained unimpaired for an instant or two.

Was it, nevertheless, practicable for her to blush? Here I admit the difficulty to be greater. Yet such a suffusion of the countenance is, we know, the act of the extreme capillaries which can, and do occasionally, enlarge their diameters, independently of the heart and larger vessels. Moreover, so far as the face is furnished with blood from within the *cranium*, a diminution of this fluid would be prevented, for the requisite period, by the pressure of the atmosphere, the firmness of the skull, and the inelasticity of the brain.

Repeating, therefore, that although the narrative is not

sufficiently avouched, to be entitled to full credit, yet is there in the tale, nothing absolutely beyond the bounds of possibility.* But to return to our subject.

The respiratory nerves, also supply the organs of digestion. It is by the agency of those nerves, consequently, that our food is converted into chyle, which, passing into the general circulation, supplies the daily waste of the body. This constant drain is caused by the ejection from the system, through various emunctories, of different substances, which are either effete, or pernicious. And hence it is, that our corporeal frames, are never composed, for two consecutive moments, of precisely the same material atoms. Incessant change,† is the law of our grosser nature, while so far as we are warned by memory, taught by philosophy, or enlightened by religion, our moral identity experiences no alteration.

We come now to the Nerves of Motion. They derive their name from the circumstance, that they are the exciters of all the voluntary movements, which take place in the body, or limbs. The movements themselves, whether voluntary or involuntary, are always caused by

* The probability of the story is much lessened, by some experiments made at Berlin, on the head of a man who had been decapitated by a single blow from a sword. The features remained unaltered, nor could the slightest sign of intelligence be elicited, although the circumstances were eminently favorable.—*Phila. Journal, &c., Feby.*, 1840, p. 423.

† In childhood, the entire body is probably renovated in the course of every few months. In maturer years, the process, though never interrupted, goes on more slowly. Hence the old, physically, as well as morally, are less mutable than the young.

contractions of muscular fibres. The mode in which the nerves produce these contractions, though not clearly understood, will be touched upon hereafter. For the present, I may observe, that the influence which excites motion, proceeds from the brain to the distant extremities of the nerves. On the contrary, when sensation occurs, the movement is from the remote, to the central parts of the nervous system. Thus if we touch a heated substance, the painful impression ascends to the *sensorium*, whence orders are immediately despatched, through the motor nerves to the muscles, that the hand be withdrawn. Consciousness, however, it would appear, is not indispensable on such occasions. The spinal tracts, formerly mentioned, as giving origin to the two classes of nerves, being sufficiently contiguous to permit, independently of the intervention of the mind, an impression on the one to produce its effect upon the other.* And hence it is, that automatic movements take place, when the mental powers either can not perceive, or perceiving, can not effectually ordain the measures, which are requisite for the preservation of life. Except for this provision, I do not see how respiration could be continued during a temporary, but complete prostration of our sensorial and intellectual powers.

The motor nerves, and consequently, the muscles which they control, are either entirely under the dominion of the will, partially so, or altogether exempt from

* Some physiologists, suppose cerebral action, requisite on such occasions. The opinion, stated in the text, appears to me, to be the more probable one.

its influence. Our breathing we can suspend for a time and a time only; since neither earnestness of desire, nor fixedness of purpose, has ever yet enabled a person to suffocate himself by volition. Nor will passion do it. Timorous mothers, therefore, need be under no alarm, when a child's face turns black from a paroxysm of rage. To clap the back, by the way, on such occasions, is not the most judicious procedure. An application to the bare skin, on another part of the body, is a more prompt, efficacious, and lasting remedy.

While respiration is thus under our command, to a limited degree, over the circulatory, and some other systems, we have in general, no command whatever. Yet there are two cases on record, in which, as it is stated, the flow of the blood could be arrested by the will of the parties. And it is possible enough, that were the same rewards held out for the performance of this feat, which are paid for the tricks of rope-dancers, and other mountebanks, a similar stay would be of frequent occurrence.

As we are ignorant how the will acts in any case, it is not surprising, we are unable to say, why in some parts of the body it is partially—in others, totally inoperative. But, although the *efficient* cause, of this arrangement, be unknown, the *final* is sufficiently obvious. For could we, at pleasure, interrupt the play of the lungs, or the contractions of the heart, a gust of passion might induce a person to rush into eternity. But, as we are at present constituted, Cato himself, without adventitious aid, could not throw off his mortal coil.

The motor nerves, retain their power, longer than the sentient. And hence, the turning up of the eyes, and the

convulsive movements, which frequently precede dissolution the *agonie* of the French, do not indicate, as has been imagined, severity of suffering, but irregularity of nervous action. For the influence of the mind, being suspended or annihilated by exhaustion, the will can no longer modify the physiological laws of the body, and these induce the spasmodic contortions, which so frequently and so painfully, distress the attendants upon departing life. Of this, the best exemplification is afforded by the cold-blooded animals. The muscles of a decapitated shark or tortoise, will twitch for hours; and even in man, the galvanic fluid will excite contractions, long after moral death has undoubtedly taken place.*

We come now to sensation, by far the most interesting part of our inquiry. And here, the first fact to be stated, is one which *a priori* was little to have been expected. It is this. The brain, though the physical seat of sensation, is itself, destitute of direct sensibility. For experiments prove, that if the origin of the nerves be avoided, the cerebral substance may be lacerated, or otherwise injured, without the patient's being aware of it.

Sensation depends then, essentially upon the nerves; the brain, as far as is known, remaining passive, until a sentient chord has been struck. But so soon as that is done, three ideas arise in the mind. First, that of personal identity, or a conviction that he who perceives, is a

* I have known the contents of the absorbents, to be propelled onward, at least two hours after the culprit had been taken from the gallows.

being contra-distinguished from all other things, and existencies in nature.

Secondly, the notion of outness is obtained. In other words, we are aware, that the *cause* of the sensation is external to the power conscious of the impression.

Lastly, we become acquainted with time. For if the sensation continue, we are cognisant of duration. And if it cease, we remember the time was, when we felt it.

What I have now said, will be evident, if you will trace in your own minds, the series of phenomena which ensue, on experiencing a simple twinge of the tooth-ache.

But in viviparous animals, the fœtus being in every respect complete before birth, is capable of experiencing painful sensations. Pain, therefore, I believe, universally precedes, and inevitably accompanies,* our being ushered into this troublesome world. That we have *ante-nate* as well as *con-nate* ideas, is, consequently certain. Whether either class should be denominated *in-nate*, the disciples of Mr. Locke must determine.

* This is primarily induced by the confined and uneasy position of the young animal. In the second instance, it is the result of the want of aeriated blood in the system, which precedes, and induces the change, from the fœtal to the adult circulation. In addition, the new-born infant is usually transferred, from a warmer to a colder medium, than the one by which it had been previously surrounded. From these combined causes, proceeds the cry, which generally announces, that another member has been added to the human family. *With* suffering then, as well as *by* suffering, are we brought into the world, and too often, *through* suffering, do we take our dismissal from what, to many, has been a scene of woe.

But what are ideas, and whence their origin? They are states or perceptions of the mind, although the word, it may be remarked, originally meant a pictorial resemblance, and was probably derived from the phenomena of vision. It having been discovered, that when we see an object, there is an exact picture of it, painted in miniature upon the *retina*, the inference was drawn, that some thing of the same kind occurred with regard to the other senses. These pictures were supposed to be transmitted to the *sensorium*, were there contemplated by the mind, and then stored up, as in a warehouse, to be recalled when the things which they represented, became, in metaphysical language, objects of conception. The theory has long since passed away, although its phraseology remains.

That an idea should be excited in the mind, through the nerves, an impression must be made upon a sentient nervous chord, and for accurate knowledge, as we shall see, upon the organised extremity of that chord. The impression thus made, must be communicated to the brain, and be there attended to by the intellectual powers.

The several steps which I have now detailed, admit of easy proof. The first, has indeed, been already established, and the following experiment, proves the second. If you place the ends of your fingers upon a table, you will perceive, that it is hard, smooth, &c. But if a similar surface, be pressed against the middle of your arm, a vague sensation of mere resistance, will be communicated by the median nerve, which in the former instance, imparted the more definite information.

That an impression can not be known, unless transmitted to the brain, is nearly self-evident. The fact, however, can be at once ascertained, by applying pressure to the trunk of the nerve. Thus when the "foot is asleep," as it is called, the toes are temporarily insensible, from a paralysis of the great sciatic nerve, induced by our weight being thrown upon it, through the awkward position in which we had been sitting.

A little reflection will render manifest, the last proposition. Every moment that we are awake, our eyes, ears, &c., unavoidably communicate, what they see, hear, &c. But it is impossible for the mind to regard every suggestion. Some one train of thought, necessarily occupies the attention, and sometimes so completely, that no heed is taken of things without. The ticking of the clock on the mantel-piece, is seldom heard by the engrossed student, and even its striking, is often equally disregarded.

Nervous agency, is then to the mind, what a spark is to gunpowder. Impression, through the nerves, in the one case, like heat in the other, eliciting powers, which though pre-existing, were latent. Here, however, the parallel ends. For the explosive force of the powder, is momentary, in its obvious effects; whereas, our faculties, when once aroused, continue through life, their action. This is done under the guidance of laws, which are peculiar, and multifarious indeed, but as fixed as those governing the planets. Thus our ideas no more succeed each other at random, than bodies wander through space *ad libitum*. And that the mind has to recognise, to admit and to compare premises, and then deduce an inference,

can not be *less* certain, than the inference drawn; although, per chance, such inference should be, that the three angles of a triangle are equal to two right angles. Whether the study of mental phenomena, be as pregnant with important results, as mathematical demonstrations, or inquiries into physical events, I am not called upon to decide. Yet happiness is worth the seeking, and misery should be eschewed. Now the one or the other, is but a *condition* of the mind, and the invariable sequence of appropriate, and sufficient causes. Among which, not the least potential, are the functions of the nerves, and the varying states of the body. These in their turn, are affected by our moral nature, and to examine this connection, to trace the reciprocal action of mind and matter, is the theme to which I wish now to direct your attention. The problem, all will admit to be highly curious, and even the partial solution, practicable, in the present state of our knowledge, will, in the eyes of some, possess a value. Such a solution I now propose to offer.

Suppose the attention unoccupied, and all the organs of the body, in their ordinary and healthy state. Under these circumstances, imagine some casual occurrence, conversation for example, to direct the thoughts towards the delicacies of the table, among those who had feasted on canvas-back ducks. A desire again to partake of so exquisite a dainty, would immediately be felt. The wish thus excited, and it could not fail to be far more intense, did the presence, and the perfume of the birds salute the senses of the epicure, would immediately affect the digestive apparatus, by determining more blood to

the mouth as its watering proves, and by analogy to the stomach. But in virtue of a law, hereafter to be stated, an augmented circulation, produces an increase of excitement. This in its turn, affecting the mind, action and re-action would be established and continue, until the appetite attained a maximum. After a time, the inclination, whether gratified, or not, would subside ; the mind and the body reverting, with obtunded sensibility, to their previous condition.

In the example adduced, the understanding was supposed to be the seat of the primary movement. But the reverse, is more frequent, the train of actions which I have described, commonly commencing with the nerves themselves. For our corporeal frames are so constituted, that they suffer, as has been already marked, perpetual waste, and require, of course, constant renovation. Of this necessity—this waning of the body, its laws give notice, from time to time, to the intellect, which is thus warned in season of wants, that might otherwise, be neglected through the earnestness of our pursuits. Sir Isaac Newton, indeed, is reported not only to have forgotten to dine, but to have supposed he had done so, when in fact, he had eaten only by proxy. The story purports, that coming into the dining-room, and taking the cover off the dish, he saw nothing but bones. "Ah!" was his observation, "I did not know I had dined." The truth was, a friend had called, despatched the fowl which he found on the table, and then replaced the bones for the repast of the philosopher.

Trains of thought, may then commence in either the ethereal, or in the grosser portion of our nature, and when

they have once begun, the *sequence* of events will be the same—the intensity only, varying with the circumstances. Particular nerves, however, will convey particular impressions only. Thus sounds do not affect the eye, nor light the ear. Of this, every one is aware. But the principle extends much further than is generally known. For first, although the optic and auditory nerves, are of the finest texture, and obey the most delicate stimuli, yet have they no tactile sensibility, and may be cut, or torn without pain, as far as can be ascertained.

Secondly, specific sensibility, or as the fact is commonly expressed, specific stimulation, in conformity with nature's rule, of bringing about the most various results, by the fewest and simplest means, is applied to numerous, and important purposes in the animal economy. Of this, many examples might be given, but to avoid unreasonable digression, the following instance must suffice.

The food received into the stomach, having been properly concocted, is forced onward, by the muscular contractions of that organ. But as our meals are protracted, and as different articles of diet are unequally digestible, it is obvious, that without some contrivance for the purpose, either crudities would pass, or chyme be detained. Both these untoward effects, are obviated, by specific stimulation. Food duly prepared, is permitted to escape. But when matter, not completely acted upon by the gastric juice, presents itself at the lower, or pyloric orifice of the stomach, a strong circular muscle, or sphincter, placed there with that view, contracts through its peculiar sensibility, and thus closes the outlet. The

indigested mass, is then carried back by a rotary movement, to be again subjected to the influence of the digestive fluids. A repetition of these several processes taking place, *chymification* is at length perfected, and the stomach becomes relieved of its contents.*

The nerves obey one of the very few general laws, in physiology, which we have been as yet, enabled to discover. It is the one recently adverted to, and may be thus expressed. The function of a part, whatsoever that function may be, is always performed with a vigor proportioned to its bulk, and the greater or less supply of aëriated blood, which it may receive, unless the afflux of that fluid, be so redundant as to prove suffocating, or so long continued, as to become exhausting.

Of this law the bones afford a strong illustration. Under ordinary circumstances they are devoid of sensibility, yet when injected with blood, through inflammation, their capacity to inflict pain is unrivalled. Hence in the amputation of a limb, if the bone be healthy, the saw, contrary to the common opinion, imparts no sensation other than a general jar. But the torture caused by the teeth of that instrument grating upon a diseased bone, is so exquisite as to be insupportable by the stoutest heart.

The physiological law which regulates the sensitiveness of the nerves, explains very satisfactorily, the great

* Minute substances, frequently effect a passage, although unaltered, probably from being surrounded by well digested chyme. My observations, it may be further observed, presuppose a healthy condition of the organs. When these are diseased, different results ensue.

disparity observable in the *physical* sensibility of different persons. Something, I admit, must be conceded to temper, but the principle under consideration, is doubtless the chief cause why individuals suffer so unequally, under the same circumstances. While yet a student of medicine, my attention was turned to this subject, by the following occurrence. Mr. Cline amputated the leg of a man, who lay on the table with undisturbed composure. The day being sultry, the surgeon perspired a good deal, and at the close of the operation, took out his handkerchief to wipe his forehead. Upon observing this, the patient remarked, "Sir, you seem to have had warm work of it."

In the same theatre, and on the most trivial occasions, it was no unusual thing to hear a son of Erin make, as was before remarked, the most unmanly exclamations. Now here the apparent difference in fortitude, was manifestly too great to be ascribed to mental causes solely. The true solution, however, did not occur to me for many years afterwards.

But the effect of blisters furnishes the most decisive proof of the law under consideration.

Vesication of the same parts of the body in different persons, must be uniform, as far as physical agency is concerned. Yet in some, the process produces the keenest suffering, while in others, it is nearly disregarded. A medical professor, now no more, declared to me for instance, most solemnly, that having been once blistered for an inflammation of the lungs, if he were ever again called upon to choose between death or a blister, it should be death, as no earthly consideration

could induce him a second time, to experience the agony which that remedy had caused.

On the contrary, I have known a pulmonary patient, to whom perhaps, fifty blisters were applied in an illness protracted for years. In him they were commonly put on at night, and in the morning he awoke unconscious that any thing unusual had occurred during his slumbers. When putting on his clothes he dressed the blister, and then employed himself about his ordinary avocations. Nay, he once travelled a whole day on horseback, with very little inconvenience, although the excoriated cutis was secondarily inflamed from the previous application of the cantharides—a state far more painful than the original vesification.

Here then the difference was in the body, and not in the mind, there was consequently, no trial of fortitude between the respective parties. The one endured but little, while the other felt more than he could bear. The light eyes, and thin, florid skin of the one, were in contrast to the darker hair, and complexion of the other. But the chief cause of the torpor which characterized the nerves of the callous patient, was an invincible determination of blood to the central parts of his body, thus depriving the surface of its color, and its sensibility.

The principle which has been now stated and enforced, applies not only to every individual, but collectively to the two sexes, and the various families of men. Thus in females, the circulation is more languid, and the nerves are smaller,* and hence they possess, as I

* Among the anatomical peculiarities that distinguish us from

think, less *physical* sensibility than men. The final cause of which appears to be, a provision to mitigate the many pains, privations, and sufferings to which, as mothers, they are subjected.

So too in conformity with the same physiological law, the nerves of the aboriginal inhabitants of this continent possess, I am persuaded, less sensibility, than is bestowed upon those of Europeans. Hence in part, and in part only, for it is his point of honor, the desperate resolution with which an Indian prisoner bears the tortures inflicted by his captors.*

brutes, is the size of the brain compared to the nerves—these being relatively larger as you descend in creation. Now according to this rule, men occupy but the second rank—the first appertaining to the gentler sex. The fact, as in duty bound, I state, without being at all sure of thanks for my compliment, since if observation does not deceive me, where qualities are *epicene* in their character, the ladies will not accept superiority, or indeed, allow a difference. Thus a lecturer gave great offence by declaring, that the brain is, in them, softer than in us, and inquiry was made of me if the statement were true. “Softer,” I asked, “did he say?” “Yes, softer.” “Then has he reversed the fact, for it is *harder*.” “Harder, Doctor! Why you are as bad as he.” I made my peace by avowing, as is true, a *parity* between the sexes.

* With all his fortitude, the red man is not very brave. Hence, in unusual, or exposed situations, he is apt to play the coward. Thus at the battle of Lake Erie, Split-log and Walk-in-the-water, slunk after the first fire, into the hold of a British ship. And I do not recollect an instance, in which our Indians have attempted to storm a work of defence, however feeble, or badly manned. It is nevertheless, but just to remark, that from the difficulty of rearing children, and the consequent paucity of their numbers, a warrior is of much higher value among them, than in more popu-

In the same category with the copper-colored man, I should place his sooty brother. As regards courage, however, the African appears to me to have the advantage. Many of his traits of character, are indeed, highly estimable, but his moral qualities far exceed his intellectual powers.

The law regulating the sensitiveness of the nerves is curiously modified in children. *Irritability* and not sensibility is the result of the profuse supply of blood which, in them, is sent to the brain. Parents therefore are mistaken when they suppose their darlings suffer so much from the ordinary accidents incident to childhood. "Poor little things," we constantly hear exclaimed, "how greatly they must feel," and this even where the injury is trifling. But in truth our sympathy misleads us, as any one may know, who will observe the promptitude and good humor with which the "little things" return to their play, after a fall, or a stroke that may have caused the blood to flow. Nay, I have seen infants under operation for a hare-lip, smile in the face of the surgeon by the time the ligatures were drawn. Whereas in adults the removal of that deformity is attended with intense pain.

As the general nervous system of children is obtuse, so are their organs of sense. By some they are thought

lous countries. He is not only of more importance to his tribe, but his family may depend for their existence upon his success in hunting. From these combined causes, although sufficiently anxious to slay his enemy, yet after the *manner of a militia-man*, the thought always uppermost in his mind is—to take care of himself.

blind at birth. But in this opinion, I do not concur, for on these occasions they stare about them as if, which is true enough, they have been ushered into a strange place.

The condition of the nervous system in children readily explains, why they take such delight in brilliant colors, and much to the annoyance of their seniors, in loud noises. To the young and the old, from the cradle to the grave, sensations are indispensable, and strong impressions can alone produce them, where the senses are immature or torpid.

The theory of physical sensibility which I have now propounded is no doubt correct. But when you come to apply it, you must be on your guard, lest you fall into mistakes. For very few, when stating what they have suffered, soften their expressions. The reverse is more common, and some persons habitually employ the most exaggerated phrasology, and this whether the occasion be slight or grave. Thus I was called upon to prescribe for an elderly gentleman of the old school. His maladies were internal and did not materially affect his general appearance, so that I could form no accurate judgment of their extent or severity. In describing what he endured, ordinary language was altogether too feeble, and he interlarded his narrative *after a manner far more frequent in former days than at present*, and my sympathies were proportionately excited. But calling on him one morning, he went through his usual round of vehement asseverations, in detailing the tortures he had experienced during the past night. Now, however, a finger was the offending part, and upon examination, I

found a slight inflammation from a split nail, which I undertook to remove. To this he would not consent, and I listened ever after with great calmness to his expletives, and hyperboles.

Yet there are instinctive acts and movements by which you can determine, independently of his declarations or his outcries, whether a patient's agony be at or near its maximum. But the signs vary with the cause. If that be mental, we have one train of symptoms—if corporeal, another. Of this, Mr. Campbell does not appear to have been aware when he wrote Gertrude of Wyoming. For when she is killed by the Indians, the hero's affliction is described as a

—“burst that came
Convulsive, ague-like across his shuddering frame.”

Now nothing can be more exact than this, if applied to a patient undergoing some excruciating operation, at the hands of a surgeon. I was struck by the exact resemblance the moment I read the stanza, and have no doubt, that from such a scene the picture was actually drawn. But the ancients understood this matter much better when they represented Niobe, as converted into stone, on the loss of her children, slain by Apollo.

When corporeal pain approaches its utmost limit, an involuntary twitching of the muscles, is succeeded by a general and convulsive shudder. Whereas excess of mental agony, petrifies the sufferer. Not a word is uttered, not a groan escapes, not a tear is shed. The secretions are arrested. A glazed eye, an open mouth, a dry tongue, and a cold skin, proclaim the extremity

of distress. From this point, the sequence of occurrences is the same, whether the cause be in the mind or the body. The power of endurance is exhausted, and a deprivation of all sense ensues. This affords a respite, which, nevertheless, can not continue. It must be temporary, or it is fatal. Usually, the stricken being revives, and relapses, until nature can rally her forces for the rescue. Should she be unable to make the effort, or making it, fail, the sole—the certain—the speedy minister of relief—is the angel of death.

But in circumstances less extreme, screams, tossings of the body, and above all, showers of tears mitigate the intensity of feeling. Accordingly, Baron Larey remarks, that those soldiers who under severe surgical operations, uttered the cries to which they were prompted, experienced less injury than those who suppressed, as unmanly, the instincts of their nature.

In confirmation of the Baron's statement, Sir Astley Cooper used to relate in his lectures the case of a British soldier, who when about to be flogged with great cruelty, observed to his companions, "they should that day see what a man could bear." He submitted to his punishment without a groan. But the consequence was, that his heart yielded to the shock caused by the effort to conquer his emotions, and he died in a few weeks from a disease of that organ.

It follows then, that where the nerves are painfully affected, whether from moral, or physical causes, the patient should be encouraged to seek relief by external expressions of his wo. Merely speaking of it indeed, for a reason hereafter to be assigned, produces a sooth-

ing effect, which is by no means inconsiderable. This is beautifully touched upon in Tristram Shandy, where Mr. S. launches into a pompous dissertation on the death of his son, and discourses until the boy is altogether forgotten. Yet I like still better what passed in the kitchen. When the fate of "Master Bobby" was canvassed among the servants, Trim remarked, "the Squire would get ease by talking, madam by crying, but that his poor master would keep it all to himself."

But it is not the more kindly emotions alone of our nature, which pass away in sounds. The angry passions obey the same law. Hence, those who from their position in society, can not give vent to their animosities, are found to cherish their malevolent feelings with greater pertinacity. The following anecdote which used to be related by the late Com. Decatur, is in point.

The Commodore was, it seems, born and reared among the Quakers. Conversing one day, with a member of that taciturn sect, he took occasion to compliment him, "that while the rest of the world were jarring, and wrangling, *Friends* never quarrelled." "Thee art mistaken," was the reply,— "thee art mistaken, the difference is not so great as thee imagines. You quarrel with your tongues, *but we quarrel in our gizzards!*" A slight anatomical blunder to be sure, but the expression is not therefore, the less forcible, nor the fact less confirmatory of our philosophy.

But enough for the present, when we meet again we will pursue the subject.

DISCOURSE THE SECOND.

GENTLEMEN,

AT the close of the last lecture, we were engaged in an inquiry which time did not permit us to conclude. The subject under consideration, was the provision made by nature, for the relief of our nerves when painfully affected, through causes either moral, or physical. Some detached circumstances, explanatory of the mode in which this is accomplished, were then mentioned, but the principle more particularly involved, will now be stated. It consists in the fact, that the muscular and nervous systems are antagonizing powers. Accordingly, it will be found, that where the former is thrown into strong and frequent action, the nerves are rendered steadfast. On the other hand, they become morbidly mobile if our strength be rarely exerted. Observe, consequently, how different are the loungers in city drawing-rooms, from the squatters and rangers of the west. Those weak of limb, and yielding to external impression, or internal impulse. These heedless of all emotions, save the grosser instincts of their nature, braving the elements, contemning danger, and despising injuries, which do not affect life, or limb. The very word *nerve*, has I suspect, no place in their scant vocabulary, and they are

as regardless of the thing as they are ignorant of the term. Gratify their appetites, and provide for their immediate safety, and little heed do they take of what may betide them. But where luxury and indolence prevail, where no risk is to be incurred, and where the difficulty is not to secure necessities, but to engender wants, which are gratified the instant they are devised, the "foul fiend" takes up his abode. Of his actings and doings, it would be foreign to my purpose to speak, but those who wish to peruse, in some of the finest poetry in the language, a veracious history of the manner in which the "wizard" treats his victims, may consult Thomson's *Castle of Indolence*. For a didactic speaker it is more appropriate to remark first, that nervous affections though whimsical in appearance, are not always distempers of the imagination, and if more variable, and less dangerous than diseases of the bones, and the blood-vessels, are yet not so readily borne, and lead oftener to self-destruction.*

Secondly, to remedy these disordered feelings, muscular aid should be invoked.

"Throw but a stone—the giant dies,"

says the poet. In plain language, a cure is to be sought by exercise, and that in the open air. For our sex

* Dr. Johnson rejected with contempt, the idea that our mental could equal our corporeal sufferings. He was, however, greatly mistaken, for experience proves that thousands commit suicide from distress of mind, for one who does so through ills of the body. So rare is an occurrence of the latter kind, that not a single instance of it has come under my actual observation.

where an opportunity offers, and the patient has the requisite courage, the following prescription will be found infallible. Let him join the army, march into the enemy's country, and there take a *quantum sufficit* of Charles the Twelfth's music—the whistling of the bullets.*

It would then appear that there exists a general opposition between the muscular and nervous systems. But this antagonistic action is most remarkable in the levators of the lower jaw, and the motors of the tongue. Thus in regard to the first, I have seen patients to whom

* An active, exciting, and dangerous mode of life, as it steels the mind, so it hardens the body. An old campaigner, or a western trapper, greatly resembles corporeally and mentally, a beast of prey. Both are not only at all times ready, but prone to engage in battle, and they bear exposures, privations, and injuries equally well. Take as an example, the case of Capt. Lewis, who when returning from his journey to the mouth of the Columbia River, was mistaken by one of his men for a deer, and shot with a rifle bullet through the hips. Not a great deal is said about the wound. The Captain was laid in a canoe, and when next heard of, appears to have been as brisk, and as lively as ever. How would a person taken suddenly from civil pursuits, bear such an accident, and such treatment? And hence it is, that looking to the loss of life alone, a militia is the most costly defence upon which a country can rely.

It is by the way a singular circumstance, that courage seems to be the only virtue which can be invariably engendered in the human mind. A sot can never be trusted in a cellar, nor a rogue with untold gold, whereas, by proper training, a raw recruit, afraid of his shadow, becomes *certainly* converted into a veteran, whom no danger can appal. I recommend the fact, to the attention of those, who esteem the laws of mind, to be the dreams of metaphysicians.

caustic was applied, seize the bed-clothes, and bite them with the fury of rabid animals. Soldiers too when tortured by the lash, chew a bullet, and a clenching of the teeth is the instinctive resort of those, who experience intense corporeal suffering.

Combine now the facts which have been stated, with the additional circumstance, that men are prone to applaud themselves where they wish to have credit, and where they know, or at least, apprehend a deficiency, and you have an explanation of the contrast so frequently observed between *talking* and *feeling*. Strong emotions being sufficiently apparent to others, require no blazoning, whereas feeble sentiments, if not especially dwelt upon would escape notice. These consequently, constitute the themes upon which the self-complacent prefer to entertain their auditors. But we have seen that even the most poignant impressions are weakened, nay, subdued by giving utterance to our woes ; in other words, by the repeated contractions of the muscles about the throat. Where then is the wonder that affections of the mind, originally faint, should, through the same process, altogether vanish ?

I may further remark, that pretenders often betray themselves by over-doing, and now and then by under-acting their parts. To the former, they are tempted by their desire to exhibit on all occasions, the extreme delicacy of their sensibilities. Into the latter error they fall from the conviction, that particular commendation is never bestowed upon the individual who feels, merely in common, with others. Hence those who are perpetually boasting of their sensitiveness, never waste their choice phrases,

and well turned periods upon the more serious misfortunes of life. Sterne, therefore, played the sentimentalist to perfection, when he could lament, in strains of unrivalled pathos, the fate of a caged starling, or a dead ass, while disregarding the privations of a mother, and sufferings of a wife.

Pain, it has been observed, is by no means intolerable simply in proportion to its severity—our power of endurance depending upon the species, and the seat, no less than upon the amount. On some occasions, the very infliction imparts the firmness necessary for its support, on others we sink under the first sensation. To the first class, belong stinging applications to the skin. Under the second, may be ranked disorders of the stomach, and its appendant organs. In these a simple of oppression, the dyspepsia of society, is more insufferable than pain of far greater pungency, arising from cuticular affections.

But the most remarkable example of ready and repeated endurance, is shown in the fulfilment of the great injunction, “To be fruitful, to multiply and replenish the earth.” Here the penalties, *on one side*, are of proverbial severity, and yet, how finely does the frailty of Eve display the ready heroism of her daughters ?*

* The *physical cause* of the evils incurred through our common mother, is the early and prodigious growth of the head in our race. Among the inferior animals, there being no such enlargement, they are of course exempt from its distressing, and often fatal consequences. The following details on this subject, may prove interesting. At three months of fœtal life, the development of the human brain, corresponds with that of fish—at four

Every thing, nevertheless, connected with man being finite, so are his pleasures and his pains. With this unfortunate difference however, that the limits of the former are far straiter, than the bounds of the latter. This arises from a variety of circumstances. In the first place, the causes of our suffering are far more potent, as tearing, burning, &c. Secondly, the impressions thus imparted, are not only more intense, but more durable, and have in addition, both a capacity, and a tendency to augment. For pain produces irritation, irritation an afflux of blood to the part affected, and with it, as we have seen, an increase of sensibility. The action, and reaction formerly mentioned,* are thus established, and greatly to our detriment.

All this is in a great degree reversed with our pleasurable emotions. Of these, the exciters are necessarily gentle in their character, and the nervous susceptibility on which they operate, though temporarily heightened, when called into action, is soon exhausted. Hence pain may be from the first exquisite, and possess at all times a *vis insita* to urge it to a *maximum*. Whereas agreeable sensations, are, *ab initio*, incapable of

months, birds—five, *rodentia*—six, *herbivora*—seven, *carnivora*—eight, monkeys. And further, there is reason to believe, that at an early, and for a brief period, the being, who is destined, subsequently, to entertain such magnificent conceptions of his own importance, exists under the form of a tadpole !

* After a time changes take place, which obtund our nervous sensibility, as has been observed in the fanatics of India, who impose upon themselves such dreadful penances. One of these is said to have lain for years on a bed of iron spikes.

the same acuteness, and are endowed with a *vis inertiae*, by which they are presently suspended. The more, consequently, we suffer, within the prescribed bounds, the more we may suffer; and contrariwise, the more we enjoy, the less our capability of enjoyment. The compensation seems to be, that although our pleasurable emotions are more petty, they are at the same time of far more frequent occurrence.*

Fortunately for us, however, our nerves can transmit a certain amount of pain only, and any attempt to push this beyond the appointed degree, acts inversely. Thus it has been long known, that criminals, broken on the wheel, did not suffer as severely, as *a priori* it had been supposed. And it is now a well established and recognised fact, that where a limb is crushed, or torn off by machinery, the pain endured by the patient is by no means

* Notwithstanding grief is more pungent than joy, yet, in its immediate effects, it is less frequently fatal. The cause I presume to be, that distressing affections, operating as sedatives upon the circulation, are seldom sufficiently powerful to suspend the action of the heart, and arteries. But these parts of the body are very commonly diseased in elderly persons, the usual victims of glad tidings, indiscreetly imparted. Now the consequence of such communications is a sudden rush of blood upon the circulatory organs, which, unable to withstand the shock, yield, and a rupture, followed by instant death, ensues. When sorrow brings us to the grave, it is ordinarily by slow corrosion; whereas happiness, if we survive the first impulse, never kills.

The facts here touched upon shed a strong light upon the sources of human conduct; but this is not the place to trace the rich results.

excruciating. But the application of heat to the body affords the best illustration of the physiological principle which thus tempers our torture.

A slight burn we all know to be painful, and we naturally conclude the deeper, and the more extensive the injury, the greater the agony. Not at all. I have seen many persons, both children, and adults, die in a few hours from their clothes taking fire, and their torments were by no means excessive. The former, under such circumstances soon cease to cry; and I recollect one young woman who expired not long after the accident, and who declared she felt no pain, and complained of nothing but a sense of coldness.

In a small way, indeed, we have constant proof of what I have just stated. Where the hollow of a tooth is exposed by decay, the dental nerve becomes so sensitive, that the contact of a morsel of food, or tooth-pick, shoots through the head like an electric spark. Yet, if the cavity be free from inflammation, the introduction of caustic produces no sensation at all, or one of mere warmth. The same thing occurs, under certain circumstances, where the eye is diseased.

The facts then being certain, we must endeavor to account for them. In this there is no difficulty. A definite arrangement of the atoms, composing the nervous pulp, can alone enable it to receive, and convey impressions to the mind. Now this construction, which is purely physical, may, obviously, be so changed by violence, as to destroy the function of the part. And hence it follows, that beyond a certain degree of force,

the pain experienced will bear an *inverse* ratio to the severity of the inflicting cause.*

Thus far our philosophy, has, I hope, proved sufficiently plain, and satisfactory, but the inquiry in which we are about to embark, being less simple, may not eventuate so favorably. For we have been investigating the effects produced by the nervous system upon the mind, whereas we have now to examine into the influence of the latter upon the former. The proposed investigation has, however, this to recommend it, that, as far as my reading extends, the subject has been in a great degree pretermitted by writers, both metaphysical and physiological.

It is an old remark, that high anticipations of prospective joys, are apt to be frustrated. That such miscalculations are partly due to moral causes, I do not deny, and our present acquaintance with laws of mind, will not enable us to trace, in detail, the manner in which those causes act. Yet observation first taught me, and reason has confirmed the conclusion, that under the circumstances supposed, physiology has something to do with our disappointments. Whence this arises, has in truth, been already explained, and was exemplified by the action, and re-action of the digestive organs, and a keen appetite. Extend the remarks then made,

* In one of the battles on the Canadian frontier, during the last war, an officer received at the same moment several musket balls in his body, and had his leg carried off by a canon-shot. The pain of these combined wounds he compared to the stroke of a whip, so that disorganization had very nearly destroyed sensibility. Perhaps it did this entirely as regarded the limb, no suspicion of its loss being entertained until an attempt was made to rise.

and you will perceive that in many of the cases under consideration, the emotion of which we are conscious, necessarily determines to the nerve, subservient to its gratification, an increased flow of blood. A temporary augmentation of excitability in that nerve, is of course, the immediate consequence, and were fruition now to take place, our enjoyment would reach its utmost limit. But in a vast majority of instances, slow-paced time interposes between the first conception of future happiness, and its tardy attainment. Hope, the while, if often, ardently, and alas, delusively indulged in, sickens the heart, and the general nervous susceptibility becomes exhausted, and thereby obtunded. A local torpor, yet more inauspicious to our gratification, is eventually induced, through a local circulation repeatedly surcharged. Hence, unavoidably, the more intense, and the more protracted the mental impression, the more impassive we are, and the more insensible the very nerve, whose office it may be, to administer the expected delight. Can we wonder therefore, that disparity should *occasionally* prevail between what we actually feel, and what we had vainly anticipated ?

The contrast too, it should be recollected, can scarcely fail to be heightened by the imagination, ever prone to vibrate from one extreme to the other.

If, however, moral causes modify nervous action, to the diminution of our joys, they also control it less frequently perhaps, yet far more energetically, for the mitigation of our sufferings. This kindly law of our nature, we shall first explain, then prove, and lastly, exemplify its beneficent operation, under the most appalling circumstances, in which man can be placed.

The reciprocal influence of particular states of the mind, and of the circulation, we have just seen. Now from opposite causes, opposite effects should ensue. As, therefore, one class of sentiments augments, the contrary should lessen the sensitiveness of our nerves.

Secondly, we know that when the mind is wrought up to some mighty deed, the vital and inspiring fluid collects about the heart, to be driven through the brain, that physical co-operation may not be wanting, to sustain our high moral purposes. But the extreme parts of the body, are consequently, left cold and colorless, with a sensibility greatly weakened.

Thirdly, we have seen, that when an impression is made upon the mind, it acts upon the body. But, in which soever system, the initiatory steps be taken, if there be no response, from the part originally passive, the impression dies. Hence mental inflexibility, should tend to produce physical firmness. Accordingly, experience proves, that by moral training, the nerves may become comparatively immoveable, or they may be enfeebled to inordinate susceptibility. Of this latter effect, we have a pleasant exaggeration in the story of the Sybarite, who complained of unquiet slumbers, from the folding of a leaf in his bed of roses.

Lastly, whether my reasoning be admitted or not, the fact that our nerves can be steeled by mental agency, admits of conclusive evidence. I can indeed, furnish on this point, a little personal experience—the germ of the philosophy, with which you are now troubled.

It fell to my lot to be tooth-drawer-general, for the little town where I began the study of medicine. My

office gave me so many opportunities of witnessing the pain, caused by the extraction of the larger teeth, that I acquired an almost insuperable horror of being myself the subject of the operation. At length a severe, and continued attack of toothache, compelled me to acquire the requisite resolution. My mind was, as you may suppose, strongly excited, when to my great, and agreeable surprise, the offending grinder, was removed, nearly without a pang. I concluded, of course, that there had been little need for so much apprehension.

Not long afterwards, the process had to be repeated, and no mental preparation being thought necessary, none was made. The consequence was, that I found to my cost, the dislocation of a triple-fanged molar, to be by no means, a trifling matter.

Furthermore, every surgeon must, I think, have noticed, that patients feel much less pain, at the commencement, than towards the end of an operation. Where this is tediously lengthened, the mind, before braced up, becomes unstrung, and the incised parts resume, with perhaps, an excess, their wonted sensibility.

But we have more decisive, and more striking illustrations of the dominion—the complete dominion, which the mind can acquire over the body.

Pascal relates, and his name is a sufficient guarantee for the substantial correctness of the narrative, that a priest of the church of Rome, was about to undergo lithotomy. For the performance of this operation, the patient has to be placed in an extremely awkward position, and that he may not change it, he is usually tied. When the ligatures were produced, the man remarked, there

was no occasion to apply them. "Give me," said he, "a crucifix, let me contemplate the sufferings of my Saviour, then place me as you please—do what you please, and be assured, I shall not move." A cross was placed in his hands—the operation was performed, and not a limb stirred. When all was over, upon looking at the countenance of this disciple of Christ, his eyes were fixed upon the emblem of his faith, and a mantling smile evinced not mere serenity, but happiness.

Lastly, how effectually had the Roman wife steeled her nerves, when she could present to her husband the dagger, from her own bosom, saying, "It is not painful, my Paetus."

The "kindly law" then, which I announced, has been proved to exist. Through its benignant influence, and moreover, with less difficulty than we should at first imagine, minds of a *certain order* can, as we have seen, rise superior to sublunary events. This elevation you will further discover, to be of more easy attainment, if, with the facts and reasoning just adduced, you combine a statement formerly made, that excessive violence does not torture our nerves, but stuns them to insensibility. Hence we perceive, and delightful is the conviction, that martyrs and patriots, who, on the wheel, or at the stake, have been willing sacrifices for their religion, or their country, did not suffer all that was designed by foes, or feared by friends. *Malignity was foiled by ignorance*, and relief, neither anticipated on the one hand, nor expected on the other, was derived, from the then unknown laws of the nervous system. The boundless merit, therefore, of these lights and ornaments of the race was not

precisely of the character usually supposed. It consisted not so much in bearing, as in resolving to bear, and that cheerfully, the torments with which they were threatened, and did actually experience. May it nevertheless not again recur, that hapless human nature shall be compelled to seek, in the principles of physiology, for some shelter against

“ Man’s inhumanity to man.”

From a theme of deep interest, where our philosophy was eminently comforting, and I hope equally sound, we must now descend to phenomena which are, at the same time, less important, and more inexplicable. They form, however, too curious a chapter in the history of the nervous system to be omitted.

The first of these very singular facts, to which I shall call your attention, refers to the anatomical arrangement of the nerves. This differs from that of the body generally, by oftener and more completely foiling our sagacity. Thus we can generally discern why a bone is fashioned after one manner, rather than another, and why an artery prefers the route which it actually pursues.* But wherefore the distribution of the nerves, which is found to prevail, has been adopted, we cannot divine. Sometimes their course is reflex, occasionally they unite, and again sub-

* The manner in which the head is joined to the neck, so as to combine strength of union with latitude of motion, has always appeared to me the most beautiful instance of *comprehensible mechanics* which the body affords.

divide, for no reason that we can perceive ; and what is more remarkable, for some inscrutable purpose, they pass from the inner part of the limb, where they are comparatively safe, to the outer, where they incur danger, apparently needless. Of this a striking example occurs in the ulnar nerve of the arm. It separates from the artery and passes, with bone for its bed, without the elbow, where almost every person has had an occasional blow, causing the ring, and little fingers to tingle. On the other hand, the blood-vessel continues its secure course, lodged upon a soft cushion of fat, within the joint.

Yet it is in their modes of action that the nerves exhibit the most surprising, and to our dull perceptions, the most fantastic results. For the rule of philosophy enjoins, that effects must ever be proportioned to causes. But the nerves, to appearance, regard no such law. Thus two persons shall be exposed to the same aërial poison—that of cholera, or yellow-fever for example. Now both must imbibe the same, or nearly the same amount ; yet the one sickens and dies, while the other experiences nothing unusual. And it is further worthy of note, that in many instances, if indisposition occur at all, it is fatal, there being no medium between complete escape, and death.

But this is not the only singularity attending the introduction into the system of many poisonous agents. Between their reception and the manifestation of their presence in the body, there is an interval, varying from a few days to several months, according to the laws of the particular malady, and the influence of occasional causes. This deceitful calm is termed the latent period of disease,

and during its continuance the stricken individual may be conceived, by himself and friends, to enjoy the most stable health. Yet ordinarily, from the moment of infection to that of attack, a silent contest goes on between the virulence of the poison and the powers of the constitution. In extreme cases the *vis medicatrix*, with which all animals are more or less endowed, is so prostrated as to offer but feeble resistance, and the first evidence of indisposition is the speedy harbinger of death. Most commonly, however, nature rallies her forces—the blood retreats to the heart—an ague of greater or less severity ensues—reaction takes place, and an obvious struggle commences.

The conflict which now ensues is regulated by the laws of the animal economy, as affected by the peculiar character of the morbid agent. Accordingly the disorder will frequently run its destined course, and terminate unfavorably, though treated with consummate ability; or eventuate in health in despite of the plan pursued, and of the drugs which may have been administered—Nature happily overpowering the malignity of the disease, though strengthened by the folly of the doctor. And what would induce a smile, were not the consequences so serious, often the credit of such a cure is ascribed to a novel theory, just devised, to prove that, until yesterday, the members of the profession were alike destitute of science and of sense. When, however, failures occur, as full soon they do, the prescriber, formerly thought so wise, and *found by experience* to be so successful, passes, with his notions and his medicaments, into oblivion, yet only

to be followed by an endless succession of fresh pretenders, other whims and new nostrums.*

* The following narrative I think worthy of being put on record: About the year 1811, Dr. Berger, sen., the late Dr. Edward Miller and myself were requested to visit, in consultation, Mr. R. residing in Roosevelt street. He had taken immense quantities of mercury, and was then laboring under *caries* of the *cranium*, &c.

When we retired into the consultation room Dr. B. immediately remarked, "it is unnecessary to discuss the case; I know what will cure it. Let there be procured a dozen bottles of the Rob Anti-syphilitique of L'Affecteur; let the patient follow the printed directions, and he will do well."

Such was our confidence in Dr. Berger's judgment, that Dr. Miller and myself acquiesced in his suggestion. The plan was adopted, and the patient recovered his health.

Much struck with the circumstance, for I had seen the London surgeons foiled by such cases, I inquired of Dr. B. if he were acquainted with the nature of the remedy. He said he was not, but that a recipe had been published by a Mr. Allion, possessing very nearly similar properties, which I might find in a certain work which he named. The book was obtained, the article translated, and laid before the profession, in the New-York Medical and Surgical Journal, vol. 3d, p. 23. T. & J. Swords.

The following is the recipe:—

Sarsaparilla thirty ounces,

Marsh-reed grass (*arundo phragmatis*) thirty ounces,

Flowers of Borage eight ounces,

Senna and Roses each two ounces;

Boil them in nine pounds of water for one hour, then strain the liquor; put an equal quantity of water on the residuum, and boil it again for nearly two hours: strain this, and to both decoctions add six pounds of sugar, as many of honey, and boil down the whole to the consistence of a rob.

At this time the late Dr. Drake was one of my pupils, and when he entered into practice, he used the above prescription largely

I beg, however, you will not, for a moment, suppose, that, because the healing art cannot directly arrest the progress of a complaint, its resources are therefore valueless. On the contrary, we can almost invariably afford some relief, and in a multitude of cases enable nature to bring the contest to a speedy, complete, and successful issue, when, unaided by us, she would infallibly fail in one or more of these particulars. Thus, probably a full moiety, and I think a much larger proportion, of those who die of consumption, might be saved by appropriate remedies, early and pertinaciously applied.

But to return to the nerves: you may recollect my remark, that where the nerves are implicated, there is no ratio between causes and effects. The proposition might have been more strongly stated, and the *rule of contrary* would appear in some instances to come nearer the truth. Thus, a man receives, unexpectedly,* a slight blow from the hand on his stomach, and expires almost upon the instant.† Through the same part a jagged rifle-

and with great success in chronic affections. Among others, he prescribed it for Mr. Swaim, and thus relieved him of some long continued malady. When cured, Mr. S. applied for, and obtained the recipe, and he was furnished with the directions for its use. That such was the origin of the far-famed "Swaim's Panacea," I cannot of course assert; but the facts which I have stated admit of no doubt.

* When we anticipate the stroke, as in pugilistic encounters, and are consequently on our guard, the abdominal muscles are thrown into such rigid action, as to afford effectual protection to the important parts beneath.

† The case of Mr. Lambert must be remembered by many in the city; and Sir Astley Cooper used to relate an instance where

bullet may pass, as in the case of Gen. Frazer, at Saratoga, and yet the patient survive several hours.† Nay, a gun-shot wound of the stomach is not necessarily fatal, and has been survived. Moreover, for any thing which I can see, the organ might be removed altogether, as has been done in dogs, without being followed by any symptoms, peculiar to such an operation.

The same reverse between causes and effects, is exhibited by the nerves of the limbs. A puncture of the finger, or toe is frequently followed, as every one knows, by lock-jaw, and I have seen tetanic spasms arise from a scratch upon the hand, in trimming an apple-tree. Yet an arm, or a leg may be crushed by machinery, and no nervous affection ensue. Nay, a man by the name of Wood had his arm torn off by a windmill at the shoulder-joint, and recovered without an untoward symptom.

Such, gentlemen, are the anomalies exhibited by the nervous system, and as that system is the efficient agent, in every movement which occurs in the body, you may well imagine we are little able to generalize living functions—morbid or healthy. Yet to attempt this has been, for we have improved a good deal, the employment, and the opprobrium of the profession. To trace vague analogies is equally easy, and useless; whereas, amid a multitude of symptoms bearing a close resemblance, to dis-

a slight back-handed blow, given, as it appeared, as much in jest as in earnest, proved immediately fatal. In neither of these cases did dissection discover any internal injury.

The effect of drinking cold water, in a heated state of the body, is well known.

*Quoted by the author in the
first volume of the "Lectures on the
Nervous System"*

cover differences as essential as they are obscure, is frequently a laborious, and occasionally an impracticable, task. Theorizing then, as it is termed, in medicine is pernicious, for this reason among others—that, unless most cautiously conducted, it gives the mind a bias in precisely the wrong direction. For it habituates the practitioner to seek for similarities, of which an abundance always lie upon the surface, instead of training him in the far severer, and less agreeable duty of disentangling combinations, not unfrequently of extreme intricacy. Upon the correctness, however, of this analysis depends the only hope of judicious practice, since if there be in this respect an error—technically a false *diagnosis*—the physician does not simply strike at random; he takes aim—but at the wrong object. The distinguishing characteristic, consequently, of an eminent prescriber is sagacity; and that quality must necessarily be perverted when habitually employed in the detection of coincidences, casual if real. And it may be further remarked, that where the mind is originally untoward, narrow, or confused, reading, and what is commonly called experience, that is, seeing much and discriminating, and consequently understanding, nothing—do, as I have often seen, more harm than good. A perverse intellect, like the spider in the fable, distils poison* from elements which a hap-

* I have been many times amazed at the dexterity acquired in perverting facts, and in seeing what does not exist.

It is very singular, but undoubtedly true, that perhaps the rarest talent in the world, is the power of perceiving things, as they actually are.

pier organization had elaborated into honey. Diffusion extinguishes a rivulet, while a bolder, though muddy stream frequently becomes more dull and turbid as it flows—dark and slow, through its own acquisitions.

Hence, probably, it is, if you will permit the digression, that with a superabundance of learning, untiring industry, and, allow me to add, with the highest moral worth, comparatively few medical practitioners, have attained permanent celebrity. About half a dozen names, compose our catalogue of immortals. The endowments required for great eminence in our profession are, I suppose, extremely rare, and when conferred by nature, from whom only they can be derived, are usually devoted to more enticing pursuits, than the practice of medicine. Yet, possibly, we may be unfortunate. “Counsel, learned in the law,” may have the advantage of us; for an eminent legal friend once observed to me, “It is wonderful how little sense is necessary to make a lawyer.” How far he was right it is not for me to say; but I never saw a blockhead of a doctor, who was not as much of a fool in physic, as in other things. I have indeed often found him more so—a greater ninny in his proper vocation, than on any other subject.* In the ordinary affairs of life, he is, unconsciously, more or less guided in opinions, and conduct, by those with whom he associates. But in medical *space* he wanders *ad libitum*, and if he fall not

* It is to be remarked, however, that although a person may possess no great amount of mind, yet if that little be of the right quality, and exclusively devoted to his profession, he may become a good, and successful practitioner, in ordinary cases.

into Thomsonian-ism, Homoëopath-ism,* Broussais-ism, or some of the other *isms*, which slit across his wild trajectory, be assured the man is not *absolutely* devoid of wit.

But to return to the functions of the nerves. The last peculiarity I shall mention, is the periodical regularity with which they act. With respect to eating, sleeping, &c. there is no mystery; but that attacks of disease should recur regularly, after definite, and very unequal, portions of time, is inexplicable. Thus, the exacerbations of hectic fever frequently occur at ten and four o'clock every day, although one of these paroxysms is sometimes absent. Then we have quotidians, tertians, quaterns, double tertians, and triple quaterns,† &c. Other complaints revert at the end of a week—a fortnight—a month—a year—and this, in many instances, with the utmost precision. Are there cycles, and epicycles of action in the human body?

* When I first heard of the homoëopathic practice, I was strongly reminded of an occurrence which is said to have taken place at the representation of one of Dryden's plays. The poet made his hero declare—

“ My wound is great, because it is *so small*”—

“ And would be greater were it *none at all* !”

exclaimed the Duke of Buckingham, jumping up, and completing, at the same moment, the couplet and the nonsense.

† In a double tertian the attacks occur every day; but those of Monday and Wednesday correspond in point of time, as do those of Tuesday and Thursday. In a triple quatern, the coincidences are between Monday and Thursday, Tuesday and Friday, and Wednesday and Saturday, &c. The latter of these forms of disease is rare, but the first is common enough.

Having now considered the principal phenomena presented by the nervous system, two questions arise. The first, what is the *modus agendi* of this system? And secondly, and more especially, does the cerebral portion of it, the brain, in performing its functions, as the material instrument of thought, act massively; or are particular ideas the exclusive productions of particular parts?

The former of these queries will not occupy us long, since the explanations which it admits of, are scant, and far from being satisfactory. But the latter propositions involve the phrenological hypothesis, and will require a more extended investigation. Though protracted, it will prove, I hope, not to be tedious, and will, at any rate, compensate all lovers of truth, by leading them to conclusions on which, in my apprehension, they may securely rest.

With regard to our first inquiry, I must commence by repeating a remark formerly made, to the effect, that some change in the relative position of the particles constituting the nervous pulp is indispensable, when that pulp receives, transmits, and imparts impressions to the mind. Thus, we see objects, in consequence of a succession of motions, beginning in the *retina*, and terminating in the *tubercula quadrigemina*, four small eminences in the brain, which constitute the precise seat of vision. Here, then, we have a series of physical changes, in virtue of which, we perceive colored light. The question is, what are those changes? I confess, I do not know, and it were idle to waste your time in discoursing about vibrations, indentations, and other random conjectures, which have been hazarded to explain sensation. Nor are we

better informed, as to the action of the nerves, in carrying on the processes of digestion and respiration. The excitement of muscular contraction, considered apart from the other phenomena, *it would be convenient* to ascribe to a fluid of a very peculiar character, thrown off, by the act of volition, from the extremities of the nerves, like sparks from the prime conductor of an electrical machine. The stream, while our bodies are in full vigor, would appear to be continuous, or nearly so, and hence the movements of the muscles are then strong and steady. But in advanced age, the will is not so readily and perfectly obeyed; and hence the tremors in the limbs of elderly persons, resulting from the alternate contractions and relaxations of their muscular fibres, caused by the irregular supply of nervous power.*

The *flow* of this fluid, if there be anything of the kind, is very singular, for it can be arrested by the finest thread, tightly drawn round a nervous chord, and will not, when obstructed in one filament, although there is a communicating branch, pass circuitously, from the part above to that below, as does the blood, under similar circum-

* While we are awake, there is always an unequal distribution of the blood, caused by our avocations, trains of thought, &c. The immediate effect of falling into a state of repose, is to equalize the circulation, and with it, the nervous power. Hence many of the muscles receiving a sudden influx of that power, are thrown into a convulsive movement, causing that start, which so frequently indicates the instant we become soundly asleep.

During the day, and particularly when actively employed, there is an exhaustion of nervous and muscular power, which sleep restores. The supply being in one case less, in the other greater, than the consumption.

stances. Yet some physiologists think, although the evidence is not complete, the nervous energy can be transmitted, by means of tin-foil, from one extremity of a divided nerve to the other, provided the intervening space do not exceed the eighth, or sixteenth of an inch.

One writer says, that the nervous fluid has been seen in the form of a spark ; but this is inadmissible without further, and stronger evidence. The chemical powers of the nerves, it may nevertheless be remarked, however exerted, are so great as to control the more ordinary laws of chemical science. At, or frequently a little before, death, the usual elective affinities of matter resume their sway.

With regard to the main proposition, it is, I think, impossible to doubt that the brain is the material instrument of thought. And I further believe that organ to be connected with the mind, so far like *cog-work* in mechanics, that movements, originating as they may, in the one, are necessarily communicated to the other

For the first point we have the evidence of consciousness, since, when perplexed by some puzzling problem, we experience uneasiness in the head, particularly, as I think, in its more anterior part.

Secondly, when indisposed, with dyspepsia for example, we *feel* that the cerebral machine is out of order.

Thirdly, when engaged in intense thought, an unusual supply of blood is sent to the head. Hence studious persons are apt to be chilly, particularly about the feet, and require loose and warm clothing. And hence, also, where the brain is overwrought, as in the case of Sir Walter Scott, paralysis, or apoplexy frequently ensues.

Lastly, we have direct proof. A young man lost a large portion of the frontal bone, by an accident. The wound healed, but the bone itself was not regenerated, so that a distinct osseous edge remained. In after life, when this person attempted close study, internal soreness, and external inflammation took place, and compelled him to desist. It is quite certain therefore, that here motions of some kind had occurred in the cephalic mass. What was the nature of those motions is entirely unknown.

We come now to the second inquiry. Does the brain then, in exercising its functions, as the material instrument of thought, act in large, and undefined masses? Or, are minute, and distinct portions of the *sensorium*, exclusively appropriated to particular processes, and affections of the mind?

Philosophers in general entertain the former of these opinions—its vagueness corresponding with the scantiness and uncertainty of their knowledge. The latter is the doctrine of the phrenologists, and, from its superior exactitude, conforms to the intimate acquaintance, which they profess to have with the cerebral physiology—a department of the animal economy wherein the discoveries, alleged to have been made by Gall, and his disciples, are, indeed, amazing. So great, in truth, as to authorize the construction of a diagram, that shall reveal to our astonished senses, the mental machinery of the Encephalon! I hold the well-known chart in my hand, and you perceive how complete is the arrangement—how definite are the details. In neither respect, can it be surpassed, or even equalled, by the plan of an embryo

town, traced upon the fair surface of an alluvial plain. The architect of a city has to provide for prospective, but contingent multitudes, whereas the task of the phrenologist has been confined to the accommodation of a few—some thirty-five individuals only. And of these he has disposed to admiration. A little common remains, of a truth, to be assigned, at some future day, to the very few tardy immigrants, who may, by possibility, present themselves. But, with this slight exception, the whole cephalic territory has been divided, and so happily appropriated, that the entire phrenological community—classes, families, and members, find themselves permanently established—no dispute about titles, and comfortably allocated, according to the degree of their respective affinities.

Such a display of ingenuity and science would be delightful, could we only feel assured of its correctness. But unfortunately, incredulous myself, as to the merits of phrenology, and believing it to be one of those creations of the fancy, which have so often deluded men of candor and intelligence, it becomes my duty to expose, what I conceive to be, the errors of its advocates. For that purpose, I shall state their views in the form of general propositions—a shape in which mistakes can be most readily detected, and certainly proved.

The following summary, will, it is believed, be found correct :

First, That minute and distinct parts of the brain, termed “organs,” are exclusively appropriated to particular affections, and processes of the mind.

Secondly, That these affections, and processes, will

be intense, and vigorous, *cæteris paribus*, as the size, technically, as the "development," of these "organs."

Thirdly, That the "organs" in question, are situated upon the surface of the brain, and to that surface, and consequently to them, the skull is secondarily moulded, and with great accuracy. Hence, cerebral elevations or depressions, will cause corresponding inequalities in the *cranium*. But these inequalities, being osseous, are durable, and being superficial, are at all times visible, they therefore enable the professor of phrenology, to determine the talents, and character of any individual, living or dead, whose head may be subjected to his examination.

These three propositions embrace, as far as I can understand it, the whole doctrine of phrenology. They will be discussed, in the order in which they have been enumerated, but a few prefatory remarks will enable us to proceed more at our ease.

In the first place then, it must be acknowledged, that, when conducting the argument, we labor under an embarrassment from which the phrenologists are exempt. They contend for what is positive, nay, in a great degree, perceptible, and capable, if true, of the most satisfactory evidence. On the contrary, we are compelled to acknowledge our ignorance of the manner in which the brain performs its functions, and are, therefore, unable to demonstrate that they are *not* executed in any given manner; or otherwise we might, by the process of exclusion, make, at least, some approximation to the truth.

But, secondly, feeling always interferes with our powers of ratiocination; nor would I have you labor un-

der a prejudice, in favor of even the truth; I must, therefore, endeavor to relieve your minds from any prepossessions, which they may possibly entertain, with respect to the supposed tendency of phrenological speculations. It has been alleged, that they weaken our convictions of human responsibility, while they strengthen the cause of materialism. Both charges appear to me groundless. The first, I esteem untenable, allowing to the phrenologists, as we are bound to do, the benefit of their entire doctrine. The reasons for this opinion cannot now be given, but at the proper time they will be submitted to your consideration.

With regard to the second of these imputations, it will, I think, appear, when we shall have been prepared for the inquiry, that the phrenologists, upon their own principles, are not only orthodox, but, *in discussions among themselves*, are constrained, and with irresistible force, to oppose materialism.

Should, however, the argument hereafter to be offered, prove less cogent than I anticipate, yet to me it appears certain, that the phrenological hypothesis involves nothing, with regard to the constitution of man, which, in reference to that constitution merely, may not be safely granted. The "organs," in fact, hold precisely the same relation to the mind, which is conceded to the eye, ear, &c. That is, they are definite structures, through whose agency alone, particular ideas can enter the understanding. The believer in phrenology may doubtless go further, and contend, that beyond his "organs" collectively, or in other words, beyond the brain, there is nothing. He may, in short, be a materialist,—but he is not

necessarily so, in virtue of his peculiar opinions. They require of him only the admission, in detail, of what every one acknowledges, in the gross. Thus, it is obvious to all, that we grasp objects by means of the hand. Now, if an anatomist were asked for a minute explanation of the mode in which this is accomplished, he would proceed to demonstrate the individual bones, muscles, and tendons by which the operation is performed. Having done so, his science is exhausted, and he would leave the remoter causes of the phenomenon as inexplicable as he found them.

In the same manner, some action of the brain, in whole or in part, is doubtless connected with every state of the mind; but upon the *nature* of that connexion, phrenology, although it were ever so true, would shed no ray of light. Of this the proof is conclusive. We *know* that the *Tubercula Quadrigemina* form the seat of vision. Has the discovery made us one jot the wiser, *how* the mind discerns external objects? So, were it practicable to prove that the "organ of veneration" is indispensable to our religious impressions, a very curious fact would, unquestionably, be ascertained. Yet to what would it amount? Why to no more than this—that a sentiment, always known to depend, while we are on earth, in some way on the brain, is now found to be associated, not with the *sensorium* at large, but with a small and circumscribed portion of it. The character of this association would be then as inscrutable as it is now, and we should be equally bound, as at present, to maintain, that the power of *feeling* must differ from the apparatus, which conduces to the emotion felt. Small is the resemblance of the

camera obscura to the light which it refracts, and incomparably less should be the similarity, between four little eminences in the brain, and the diversified, and magnificent ideas of which they are the immediate physical cause, and the mind the exclusive percipient.

Phrenology, then, with those who comprehend its real scope, is sufficiently innocuous. But where the intellect is weak, or eccentric, or where the understanding has not been enlightened by philosophy, the hypothesis may lead, in common with all inquiries merely physical, to the most deplorable consequences. For a person, in either of these predicaments, is extremely apt to be hurried away by novelty—to mistake an advance, partial, if real, for the final solution of a problem, and to forget, in the exquisite subtlety of a contrivance, that there is any contrivance at all, and consequently a contriver. The hazard is, therefore, imminent, that, by many of the disciples of Gall, too much importance will be attached to the physical properties of the “organs,” and too little regard had to the power beyond those “organs,” *supposing them to exist*. This danger is, moreover, greatly enhanced by the incautious language of some phrenological writers. Take in evidencê the following extracts from Spurzheim’s account of “eventuality,” as quoted by Mr. Combe :* “This faculty *recognises* the activity of every other.” “It *desires* to know every thing by experience.” “Is *fond* of general instruction,” &c. &c.

Now, all this may be metaphorical, as we say, the eye is *delighted* with the softer hues, and *offended* by

* Combe’s System of Phrenology. Boston, 1835. p. 405.

glaring colors. Yet it cannot be denied that such expressions are calculated to detain the inquirer, and satisfy him with the investigation of physical, to the neglect of ulterior causes. Those phrenologists, therefore, who do not esteem themselves, "mere brute matter," are bound to correct such loose phraseology, and thus guard from false inferences, the imbecile, the erratic, and the illiterate.

But were the apparent tendency of phrenology other than it is, that would be a misfortune, and no fault. A philosopher, though justly answerable for the *verity* of his facts, can in no wise be held responsible for their bearing. Truth, indeed, being always consistent, it never can, under one shape, militate against itself in another form, or upon another subject. Hence, undoubtedly, if a proposition, undeniably true, be directly opposed to another, the latter *must* be incorrect. But the error should be detected, and proved by more accurate, or better devised experiments, by nicer observations, or stricter logic, and not *inferred* by a species of *reductio ad absurdum*, to the effect, that the incompatible opinion contravenes certain received tenets.

If, indeed, my voice might be heard, I would respectfully suggest, that the scriptures were never designed to instruct mankind in *general physics*, and that the authors of those books, intent upon a very different purpose, adopted, without inquiry as to their correctness, the current philosophical ideas of the day. Among these, it would be unavoidably supposed, that the earth is the great object of creation, and that the heavenly bodies are not only subordinate, but perform, for its benefit, their

daily revolutions. Accordingly, these several opinions are introduced into the first chapter of Genesis, and let him, who insists upon a *scientific* revelation, commence by their demonstration. This part of his task being happily accomplished, to the discomfiture of Newton, and Laplace, he may then encounter De la Beeche, and Lyell. By this arrangement, the alleged astronomical *dicta* of Moses will take precedence, as they should do, of, what all will then accept, as geology communicated from on high.*

Even so late as when the New Testament was written, Christ is represented as being taken up "into an exceeding high mountain"† that he might view "*all* the kingdoms of the world." St. Matthew,‡ and St. Mark,§ declare "the stars shall fall"—to the earth, of course. While St. John|| compares the descent of the stellar host to a shower of withered figs, when the tree "casteth her untimely fruit."

Now, will any person contend, that these expressions are to be construed literally? What, then, but evil, can result from attempting to coerce the strong metaphors of the East, into harmony with our modern theories in philosophy? For myself, therefore, I always regret to see the scriptures introduced into discussions connected with physical phenomena. Let the theologians, when inves-

* What would the Israelites have thought of Joshua, had he commanded the EARTH to stand still, that the day should be lengthened? And what are we to think of "the waters which are above the firmament"—that is, beyond the fixed stars?

† Matt. iv. 8. ‡ Ibid. xxiv. 29.

§ Mark, xiii. 24. || Revel. vi. 13.

tigating the subjects properly committed to their charge, confine themselves to those subjects. And men of science, in pursuing their inquiries, should recollect, that among the rules of philosophizing, no allusion is made to deductions drawn from the Bible. Nor need the proposed limitations excite the apprehensions of either party, that scope will be wanting for industry and talents. The field is boundless. Men neither are nor ever will be so good, that they may not be better. Nor will the time ever arrive, when, from the fulness of their knowledge, further increase shall be precluded. Imbue the race, then, deeply with all good learning, and where enlightened piety, and sound philosophy, *spontaneously* unite, let them lend to each other mutual aid. Their combined force will thus expand the understanding, strengthen faith, and augment, so far as the cultivation of the intellectual faculty can augment—our felicity, present and future.

I have digressed, gentlemen, into these remarks, not that they have an especial relation to our present inquiry, but in the hope of restraining a practice, far too frequent, and greatly to be deprecated. I allude to crude inferences from the Bible, being obtruded upon us as revealed knowledge, whatsoever may be the nature of our investigations. Now, to associate that book, in any manner, with fanciful notions, is exceedingly objectionable, and the heterogeneous mixture of devout opinions, and philosophical ignorance, and blunders, operates most injuriously. In pious, though weak, or uncultivated minds, conceit is mistaken for learning, and a spirit of persecution usurps the place of charity. On the other hand, the unfortunate man of

science, compelled to reject notions, which are, to him, obviously false, and refusing to acknowledge, as *facts*, rash and illegitimate deductions, finds himself in a very unpleasant predicament. Because from the standard appealed to, and the confessed abandonment of observation, and experiment, reason is excluded. He cannot, therefore be communed with, as an erring philosopher; but, easy work! is forthwith denounced as a daring infidel. Not, possibly, that he has made the slightest reference to Revelation, but has been constrained to expose some rickety hypothesis, the darling offspring of an enthusiastic parent, ardent, and sincere, though more deeply versed in the Pentateuch of Moses, than in the *Principia* of Newton. Yet am I happy to announce the dawn of brighter prospects. Liberty of philosophizing has been proclaimed from Cambridge, from Oxford, and from Rome. Surely, then, we, on this side of the Atlantic, with not more of faith, and far less of learning, will receive with joy, and, it is to be hoped, use with discretion, the freedom thus proffered from the high places of Christianity; and, what is of incomparably greater importance, RATIFIED by the SOUND DICTATES of RIGHT REASON.

DISCOURSE THE THIRD.

GENTLEMEN,

AT the close of the last lecture, I undertook to disabuse your minds of any prejudice which you might possibly have imbibed against phrenology, on account of its supposed tendencies. If I succeeded, you are prepared to estimate, at their exact value, the arguments which I propose now to lay before you. But, as we shall have occasion for a few anatomical facts, we will begin by premising them.

When we remove the coverings from the upper part of the brain, we perceive a mass of uniform* convexity, divided, for some depth, by a longitudinal fissure, into two equal, and lateral portions, called hemispheres. The superior surfaces particularly, of these hemispheres, are composed of meandering convolutions, about the size of the little finger, which seem to pursue no very determinate course—differ in different individuals, and those on one side of the head do not correspond precisely with those on the

* This uniformity is greater after death, than during life, the brain subsiding, when the surface is exposed to the pressure of the atmosphere.

other. In anatomical language, the brain, externally, is not symmetrical.

In the internal arrangement of the *cerebrum* all this is reversed. Here, the right moiety is an exact counterpart of the left, and we have great complexity of construction, combined with an almost unvaried uniformity in the heads of the same race.

If we proceed with our investigations, we shall discover that the hemispheres are hollow, each containing a cavity, called a lateral ventricle. These ventricles are long, extensive, irregular vaults, with concave ceilings, and uneven floors. During life, they contain a small quantity of aqueous fluid, which is found in them after death.

Extending our examinations, yet more minutely, we notice portions of cerebral matter, proceeding in every direction. Some of these, called commissures, unite the two halves of the brain. Others, which receive, at various points, different names, but collectively may be designated as chords, or tracts, are confined, chiefly, if not exclusively, to one side. The course of these bands is various in the extreme. They pass upward, backward, downward, forward, inward, and outward. Sometimes they enlarge, sometimes they contract. On other occasions, they expand, like the sticks of a fan, and then, plunge into the parts for which they are destined.

Lastly, the brain, its anterior part being in advance, acquires its full size, at a very early period of life. Authors differ as to the exact date, which probably is not uniform, though not later than the seventh year. After that, any

increase in the bulk of the head, is due to a thickening of the skull, and not to the growth of its contents.

This brief anatomical sketch, will, I believe, suffice for the present. Should we have occasion for further facts of that description, they can be stated from time to time, as they may be required.

Every preliminary being now adjusted, we are prepared to proceed with the argument. And, as the first step, we should be furnished with the evidence, by which the phrenologists hope to make good their assertion, "That minute and distinct parts of the brain are, exclusively, appropriated to particular affections, and processes of the mind."

A demand of the kind, we are entitled to make, because it being our province to deny, we are at liberty so to do, until some affirmative evidence shall have been produced. But such evidence, of a direct character, does not exist. For this, the fundamental tenet in phrenology, is an inference, and has to be adduced, so far as the fact can be adduced at all, from the proposition next in order. Until, consequently, that proposition comes regularly before us, no proof can be offered, and, of course, no replication can be made. Were we, therefore, to insist upon our logical rights, there could be no controversy. Yet, as our victory, however easy, would, in that case, be merely negative, I prefer volunteering a few facts, which tend to put our friends in the wrong.

In the first place, then, let me remind you of the commissures, which were stated, to pass from one hemisphere of the brain to the other. And recollect, further, if you please, the very intimate connection, which was

described, as subsisting between the different parts of the same hemisphere. Now so complex an apparatus of tracts, chords, and bands, effecting so close a union, can lead to no other conclusion, than that the sensorium is an intricate machine, destined to perform its functions, as an associated whole. Not that every portion of it is, on all occasions, necessarily, and equally employed, but anatomy certainly opposes, so far as that science can oppose, the idea of *insulation* in the operations of the *cerebrum*.

Secondly, It is observable, that in the construction of an organ, nature adheres to the model, which she may have adopted, with a pertinacity proportioned to the importance of the part. Thus, whatever be the offices of the spleen, they are undoubtedly subordinate, and consequently that substance presents great diversities in size, and shape. On the contrary, the heart is found to vary but little in either respect. And it is to be particularly noted, that while the rule now laid down, applies with truth to an entire organ, yet, if restricted to its essential points, it is still more accurate. Hence, the inequalities of the external ear, and the color of the eye, vary much, although the parts directly subservient to seeing and hearing are extremely regular.

But I have already observed, that the arrangement of the interior of the brain is, in different persons uniform, notwithstanding its superficial convolutions meander in a manner by no means constant. The inference, therefore, would appear to be, that the former constitute the efficient, and the latter the supplemental, and unimportant portions of the sensorium. Yet upon *those* the phrenologist lays

no stress whatever, while *these* he designates as his "organs." Has he erred, or is nature inconsistent?

Thirdly, It is found that where duties are deferred to an after period of life, the parts implicated remain nearly stationary, until their action is needed. Of this principle, the changes which occur at the age of puberty will serve as an example.*

Now the cerebellum whose sole office it is, according to the phrenologists, to engender sexual feeling, has, according to Meckel, its relative magnitude at five or six months after birth, and its absolute bulk while we are yet little children. Here then we have by far the largest of the supposed "organs," being, indeed, a seventh or an eighth of the whole brain, perfected, and dormant for eight or ten years. Does nature adhere to her laws, or does she vary them, as the convenience of our friends may require?

Lastly, when a particular purpose is to be answered, in the animal economy, by what every one admits to be an organ, we perceive a distinct contrivance, more or less obviously adapted to the end in view. And as these ends

* The same thing is beautifully exemplified in the feathered creation. Where birds are to walk, and to fly simultaneously, their legs and wings grow with equal rapidity. But in those which are to run about, or swim, long before they rise into the air, the limbs designed for the first of these purposes, attain their full size, while those destined to the last, continue rudimentary. When, however, the period for taking flight approaches, the pinions are developed with great quickness. Let any one compare squab-ducks, or goslings, with the young of ordinary birds, and he will at once perceive the truth of what I have stated.

vary, so do the means for their accomplishment. Thus, the lungs, and the liver are well-known organs, of circumscribed forms, with cells, and ducts, as unlike in structure, as in office.

If, however, we examine the exterior of the *cerebrum*,* we find its composition unvarying—grey without, and white within. Now, according to the phrenologists, undefined portions of this uniform mass, where no eye can trace a mete, or a boundary, and where no anatomist can detect a difference of structure, or of form, are to produce, through a difference of position merely, an endless diversity of results, more unlike than the aëriation of the blood, and the effusion of the bile. In other words, the same cerebral atoms, under precisely the same arrangement, cause parental fondness, at the occiput; above the ear, they excite to murder; translated more anteriorly, they confer skill in mathematics, and elevated to the crown of the head, they compel the creature to venerate his Creator! If there be any imaginable doctrine, *a priori* incredible, may we not place in that category the “organs” of phrenology?

I am quite aware of the objection, that all I have urged proceeds upon analogy—a mode of reasoning never very trust-worthy, and, according to my own admission, particularly unsafe, when applied to the nervous system. All this is true. Yet I contend, that those who will entertain a *positive* opinion, are bound to conform that opinion to the evidence bearing upon the case—be that

* In the *cerebellum*, the materials are the same, but the distribution is different.

evidence strong, or weak. Now, on the present occasion, however feeble my proof may be, *intrinsically*, its relative force, great from the obscurity of the subject, is for the moment, infinite—there being, as yet, nothing wherewith it can be opposed. Nor can there be, unless, perchance, the establishment, and consequent momentum of the next proposition can invalidate what I have advanced. But that proposition we have now reached, and we shall soon see how far it will avail the disciples of Gall. It is to the following effect: That “the processes, and affections of the mind, will be intense, and vigorous, *cæteris paribus*, as the size, technically as the development, of the ‘organs’ which form their exclusive seats.”

It will be more convenient to dispose of the exception before we proceed with the rule.

The phrase *cæteris paribus*, as here used, refers to peculiarities of individual temperament, and the intimate structure of the brain. With this latter circumstance, I shall begin, because its examination will lead to the correction of some general errors, into which, our friends have now and then fallen. The mistakes alluded to, consist, first, in assuming facts to be true, without an attempt to prove them, and this, where the thing affirmed is not only unknown, but *unknowable*. Secondly, when reasoning, premises, and inferences, are made to change places, as occasion may require. Examples will prove, and illustrate my meaning.

A patient, in a fit of illness, forgot the use of language.*

* Mr. Cline used to relate the following very singular circumstance, in his lectures:

Now, says the phrenologist, why will the metaphysicians mystify themselves by endeavoring to account for such an occurrence upon their principles—the case is plain—the man's "organ" of language was disordered. Here, of course, we have an assertion deduced from the truth of phrenology—the hypothesis being taken for granted, and then made to do the duty of a premise. But when a reversal becomes convenient, we are gravely assured, that an inability to employ words, through some malady, *proves* the doctrine of distinct "*organs*." In this way, what was before an inference, is converted into an assumption, and in lieu of being the offspring, is made to stand, for the occasion, *in loco parentis*. While the highly improbable circumstance, that corresponding points in the opposite hemispheres of the brain, labor under some very peculiar disease, can be established by dissection alone, and, if to be generalized, by repeated dissection. Now, upon the fact involved, the knife of the anatomist has, confessedly, hitherto thrown no light whatever.

But the following dialogue, will, perhaps, place phrenological ingenuity in a more striking light.

A female was brought into St. Thomas' Hospital, who spoke a language which, for some time, no person could understand. At length it was discovered to be Welsh, and, upon further inquiry, it was ascertained, that the patient had been born in Wales, but had removed to England while yet so young, that she had forgotten her native tongue. The disease had obliterated English from her memory, and restored her vernacular speech. To the best of my recollection, her Welsh was a second time lost, and her English restored, by a return to health.

I was conversing with a disciple of the master himself. "In what manner," said I, "do you account for the occurrence, that persons with small heads, have sometimes great, and various talents? It is not easy to understand how a diminutive building can contain apartments, both numerous and large." "Why," he replied, "this was objected to Gall, in the case of Voltaire, whose head was on a very contracted scale, and who had, moreover, the 'organ' of veneration finely developed." The discoverer of phrenology not only escaped from his objectors, but, in the estimation of my former pupil, for such he had been, turned the tables fairly upon them, by asserting, first, That Voltaire's head was two-storied. Secondly, That he was religious, though after his own manner; and lastly, that his brain was admirably organized. "Leaving," said I, "the double stories, and the religion* out of the question, how do you know the brain was admirably organized—are you well acquainted with its intimate structure?" "Not at all—we know nothing about it. But the extraordinary talents of the man prove it, and, at the same time, confirm the truth of phrenology." "Very good," was my rejoinder, "in a state of utter and confessed ignorance, you choose to in-

* Although no Atheist, whatever may have been the "manner" of Voltaire's religion, its amount was certainly not large. But his genius, notwithstanding his errors, and they were many, and grievous, appears to me to have been of the highest order. Surpassed by some one writer, in every department of literature, has he been equalled in the extent, variety, and excellence of his works, by any single author—the Prince of Philosophers always excepted?

fer a fact, and having done so, you turn about, and employ the deduction, thus obtained, to establish the very hypothesis whence the fact was itself derived—all of which is exceedingly convenient—but not exactly according to the rules of the Stagyrice.”

Of the real worth of such reasoning, you can judge, when I state, that where persons have been insane for years, nothing unusual in the brain could, sometimes, be detected. And where morbid changes have been discovered, it was frequently impossible to determine, whether they were the causes, or the effects of the mental alienation. Be assured, therefore, whenever a phrenologist appeals to cerebral organization, that, pressed by his necessities, fancy is invoked, to furnish the facts.

The second condition included in the phrase *cæteris paribus*, must then be rejected. Let us now examine the first—the effect of temperament.

It is doubtless true, that some persons are, by nature, ardent, others choleric, gloomy, &c. But these diversities among men, are the very phenomena which phrenology undertakes to explain, and if they be supposed ultimate, and, therefore inexplicable, what remains for that hypothesis to solve ?

On the other hand, a reference to temperament, would seem fatal. Since if it be conceded, that our mental qualities depend upon causes, unconnected with the “organs,” and paramount to their influence, why introduce superfluous machinery ? Why not dispense with the “rgans” altogether, and say, as through temper we are sanguine, or despondent—so by temper are we benevolent, or avaricious ? In this way, numbers 8, and 13,

would disappear from the phrenological chart. And, for aught that I can perceive, the expunging process might be thus continued, until the entire diagram should re-assume, no bad change, by the by, its original form—of blank paper.

To this consummation, the phrenologists will not, of course, consent. But it is indispensable that they revise and render their views more philosophical, and more definite. For, in the present age, it is not permitted to assume, as final, the phenomena professed to be solved. Nor can any theory, particularly one to the last degree improbable, be now bolstered up by conjectural agents, of which the character, modes of action, and extent of influence, are unknown, and inscrutable. And what here enhances the difficulty is, that the acknowledged organs of the body are under no control of the kind. Whatsoever our dispositions may be, we see, hear, &c. very much alike.

In reality, however, there is no mystery in the temperaments, as regards the brain. The principle involved has been more than once* stated, explained, and applied, and is to the following effect: "That the function of a part is executed with an intensity proportioned to its relative bulk, and the greater or less supply of aeriated blood which it may receive—unless the influx prove suffocating, from excess."

But this physiological law cannot be the one to which our friends apply the phrase temperament, because, in that case, phrenology, and fact, would be brought into

* See page 48.

collision. For according to that interpretation of the word, where "cautiousness" is large, and predominant, a man should become *less* timid, as the play of his lungs is impeded, or, as the quantity of the vital fluid passing to his head diminishes. While on the contrary, his cowardice should augment, if more impetuous torrents, or blood more highly aeriated were driven through his craven organization—results, in either instance directly opposed to the truth, as every one knows.

Temperament, consequently, cannot mean the state of the cerebral circulation. The expression, must, therefore, refer, either to the influence exerted over our dispositions, by various and distant parts of the body—a topic largely discussed in a former lecture: or the term implies those peculiarities of character, which are stamped upon us, at far too early a period, to be traced to any physical source whatsoever. But the first supposition supersedes the "organs," and the second is an introduction of occult powers, and these can form no part of philosophy. For should we be made the wiser by an assurance, that our dispositions, &c. flow from the size of certain parts of the brain, or—that our characters depend upon *hidden causes of which we know nothing?*

The exception, then, which we have been arguing must be abandoned *in toto*, and the phrase *cæteris paribus*, can constitute no part of the proposition which it was intended to qualify. That proposition is, consequently, simply, and unconditionally true—or entirely false, and, when relieved of its limitations, will read as follows: "The processes, and affections of the mind, will be intense, and

vigorous, as the size, technically, as the development of the 'organs' which form their exclusive seats."

Our inquiry next refers, of course, to the "size" of the "organs." How is that element of the phrenological theory to be ascertained?

The question is one of some importance. For did the head of every individual conform to one exact standard, not only as regards bulk, and general contour, but in minute superficial inequalities, phrenology, though founded in fact, could not be ranked among the items of human knowledge. And for this reason—we have no faculty capable, under the circumstances supposed, of recognising the "organs" even if they exist. Primarily then, this doctrine rests upon external appearances. But such a foundation proving, practically, rather narrow, an attempt has been made to enlarge it, by including the *internal* parts of the brain. Accordingly, the "organs" are held to be cones, extending from their bases, at the surface, to the *medulla oblongata*, a little above the neck.

That the elongation contended for, would prove an accommodation, is probable enough. But the assertion that any thing of the kind actually takes place, forms another of those convenient assumptions, where little is known, and that little directly contravenes the gratuitous allegation, as you shall immediately see.

I mentioned, as you may recollect, that the hemispheres of the brain contain extensive cavities, called ventricles. Now when the supposed cones arrive at these ventricles, what happens? Are the "organs" truncated above, to resume their course below? Or are the cerebral caverns surrounded by attenuated chords,

wending their tortuous way, to the point for which they are ultimately destined? I am not aware that our friends have enlightened us as to either of these particulars, and not the slightest trace can be detected for our guidance. The first idea would, however, appear to be negatived, by the fact, that the roofs and the floors of the ventricles differ widely in anatomical structure.

The second conjecture is embarrassed by the length, and sinuosities which it assigns to the imaginary cones.

It is then, against all evidence, however scant that all may be, to suppose an internal projection of the "organs." Their lateral expansion, within the substance of the brain, is equally inadmissible, not only as being entirely destitute of proof, but as presupposing the very elongations, which we have seen good cause to reject. Regard, therefore, being had, to the superficial extent of the cerebral surface, the size of the individual "organs" must be estimated by their elevation, or depression, above, or below the general outline of that surface.

But, as yet at least, we have no reason to admit that there are upon that surface any particular and definite structures, to which the term "organs" can be justly applied. That expression, moreover, always leaves upon the mind a vagueness of impression, which it were better, when practicable, to avoid. That our language therefore may conform to the facts, as we proceed, and that we may not be unnecessarily incommoded by a word to which a definite meaning is not easily attached, the proposition shall be re-stated, free from whatever is superfluous, or ambiguous. Thus expurgated, and reformed, it will stand as follows: The processes,

and affections of the mind, are intense, and vigorous, directly in proportion to the quantity of cerebral matter deposited at various localities upon the exterior of the brain.*

An accurate statement of the point really at issue, or even a correct definition of a term† will frequently end a controversy. So it is in the present instance—the argument is virtually concluded. For the phrenologists themselves, by admitting the agency of what they call temperament, and the effect of the intimate structure of the brain, acknowledge that the affections, &c. of the mind do *not* depend upon cerebral deposits, but are regulated by causes, secret, powerful, and extrinsic to such

* This appears to me a literal expression of the proposition which the phrenologists undertake, in fact, to prove. They do, indeed, introduce the exceptions which we have been examining, but these, after being once stated, and slightly enforced, receive little subsequent attention. External bulk is, and in truth must be, the sole foundation of phrenology, for all practical purposes, and exceptions are mere posterns, through which to retreat, when a surrender would be otherwise unavoidable.

† It would, I think, be well, if a political economist who undertakes to discuss luxury, or a divine who may feel disposed to rail against it, would first frame for himself, an accurate definition of the word. By so doing, the former may refute the paradox of Mandeville, more successfully, than, as I think, Adam Smith has done, with all his ability. While the latter may avoid the blunders of Dr. Clarke, with his host of ignorant, and bigoted followers.

Masillon, incomparably superior to the Commentator on the Bible, has, in common with the Church of Rome, the merit of consistency. Ascetism must be a religious duty, or we are at liberty to enjoy whatsoever we possess, provided such enjoyment does not impair our health, encroach upon our pecuniary resources, or injure the public, by setting a bad example.

depositions. Now in all this we concur. And not to be outdone in generosity, we will concede something to size of head, and the varying condition of the circulation.

Harmony, then, you perceive, gentlemen, has thus most unexpectedly superseded discord—we all think alike, and further inquiry would appear to be useless. Yet it were perhaps well to proceed. The labor is light—agreeable, and something both new and pleasant may, perchance, be elicited.

Resuming then our onward course, we may fairly congratulate ourselves upon having emerged into the broad light of day. Hitherto we have been groping our way, at every step uncomfortably conscious of the obscurity by which we were surrounded. But the region of gloom is passed—the road before us is plain—the points to be reached obvious, and essentially dependent upon the testimony of our senses. For projections of the brain are visible, tangible, measurable. The prominent traits of individual character are also readily, and certainly discernible. How far, consequently, the latter correspond with the former, is a fact capable of the most easy and satisfactory proof. Or, that failing, phrenology may be safely and confidently pronounced a mere phantom of the imagination. Which is the true alternative, it is our business now to inquire.

The argument of the phrenologists is to the following effect: That of causation we know nothing, beyond coincidence in time and space. Now observation, it is averred, establishes such a coincidence between the bulk of certain cerebral eminences, and the intensity of particular processes of the mind. Hence we are bound, say the

disciples of Gall, to admit that the latter are effects, and the former causes—in other words, the exclusive “organs” of our mental qualities.

Upon scrutinizing this train of reasoning, we immediately perceive it to be worthless—the *conclusion*, as will be hereafter shown at large, *not being borne out by the premises*. But how do these premises themselves stand? If inadequate to prove all that is required, do they establish any thing whatever? Nothing, I fear. Since to begin with the leading proposition, that is negative, and cannot, therefore, greatly add to our positive information. For, conceding our want of acquaintance with causation, in general, or, more definitely, our inability to explain the mode in which the *cerebrum* performs its functions, the admission amounts to no more than this; we do *not* know that the brain does *not* act in the manner asserted—a hopeful prospect truly, of extracting light from darkness doubly dense!

But if the major term of the implied syllogism be so unpromising, compensation may perhaps be found in the exuberant strength of the minor. Has this such potency? Is the single, solitary plea, for such I esteem it, which the phrenologists have been able to offer in behalf of their doctrine, correct? Does the coincidence contended for, actually, and *uniformly* prevail? I take the liberty of introducing the second adverb, because you are to recollect, that where preceding and subsequent events are held to be, respectively, causes and effects, the idea of such a connexion is weakened by a negative, but destroyed by a single instance of positive discrepance. Thus, the intractibility of one result has very much induced philoso-

phers to abandon Sir Isaac Newton's 'Theory of Light,* although it accounts for almost every other optical phenomenon. No person, however, would maintain our eyes to be the organs of sight, if an individual example of perfect vision, had ever been observed, in the absence of those orbs.

Our inquiry then, gentlemen, as to the point immediately at issue, is reduced to two questions of mere fact. First, Where certain projections of the brain exist, are they, without any assignable cause for the exception, invariably accompanied by certain qualities of the mind? Second, Has any one instance occurred in which those qualities were present, and unattended by their alleged "organs?"

Before I proceed to give specific replies to these queries, permit me to premise a general remark, and follow it by an illustration—greatly to be lamented. The remark is this. If the power of every "organ" be as its bulk, the power of the whole must be as the bulk of the whole. In other words, the size of a man's head is the exact measure of his capacities, moral and intellectual, taken collectively. Now this correspondence, I am sorry to say, does not *uniformly* prevail, and I am myself the unfortunate exception. I have hitherto seen one individual only, whose head was rather larger than my own, and one who was my equal. Yet notwithstanding this prodigious "development," and although my temperament is

* Two pencils of rays may be so concentrated, upon a particular spot, as to render it dark, when, upon the hypothesis of luminous particles, it should be doubly bright.

not only sanguine, but ardent, so that my brain has all the benefit to be derived from a full supply of well aëriated blood—yet, notwithstanding these auspicious circumstances, I have seen, with sorrow be it said, both in Europe and America, men less amply provided, yet greater than I!!*

Not, however, to lay too much stress upon a particular case, I have been, for many years, in the habit of regarding every remarkable head, which has come under my notice. That my observations have occasionally corresponded with the phrenological theory is very true, but a want of conformity, if not more common, has been so frequent, as to render me an absolute disbeliever in the doctrine of distinct cerebral “organs.” It has, indeed, been objected to me, that I am deficient in those little accre-

* A ludicrous circumstance once happened to me, in Baltimore, in consequence of the unusual size of my head. Being accidentally in that city, and having occasion to purchase a hat, I went, for the purpose of procuring one, into the largest warehouse where such articles were sold. To save the shopman trouble, I inquired whether he had any “large hats.” “Yes, he supposed he had.” “Then be so good as to hand down some of the largest.” He did so; one after the other was tried, and found to be too small. At length he requested permission to try, upon his head, the hat which I wore. Upon doing so, it passed over him like an extinguisher. “No, sir,” he hastily remarked, in some confusion, “No, sir, we have no hats which will fit you.”

No person would suspect, from merely looking at me, that my head is of such uncommon dimensions. The deception arises from the shortness of its transverse diameter, while that from the forehead to the occiput is of great length, the one and the other largely projecting.

tions about the brows, by which we are enabled to see things as they are. Perhaps so—but I must beg leave to trust my own eyes notwithstanding, particularly as I never could perceive, but that I discern, as well as another, whatever my visual organs have been trained to distinguish. Through an hereditary, and nearly fatal tendency to consumption, a shot on the wing, and a hunter of deer, and of foxes, I can mark the flying quarry, and detect the faint traces of larger game, or find my way in the forest, with as much dexterity as any sportsman with whom I have associated, whose general habits have borne even an analogy to my own. Yet to avoid error, I have selected, and shall state instances so strongly marked, as to render a mistake impracticable.

There was, at the college where I was educated, a pupil of whose physical formation you will have an accurate idea, when I state that the students of mathematics used to write on the walls, “What is a line? G. M.’s body.” “What is a point? G. M.’s head.” This last was so small and round, that hats being imported in those days, in what were called nests, that is, one within the other, Mr. M. was in the habit of selecting the first in the series, and it was as perfectly circular when laid aside as when first put on.

Now this gentleman labored under no deficiency, and, with some eccentricity, was endowed with talents much above the common order.

Again, there resided in the same neighborhood a Mr. C. whose cranium was so diminutive and so globular, that it was a matter also of ridicule. A turnip was in this case taken as the symbol, where turnips are usu-

ally about the size of the fist. The similitude, I have been assured by a person, not at all given to romancing, was very striking. Yet Mr. C. was distinguished for good sense, and devoid of peculiarities, either positive, or negative.

I have been long acquainted with a Mr. J., whose head is the one formerly alluded to, as surpassing my own. This remarkable bulk is chiefly owing to the prodigious projection of the parietal eminences, (No. 12,) the "organ" of "caution," "doubt," and "wavering."

Here then we have a case, as strongly marked as a case can be, and how well phrenology and fact agree, you may judge. The intellectual powers of this gentleman are respectable. But the characteristic trait of himself and family is COURAGE.

Lastly, I have known a person, the posterior part of whose head formed so straight a line with the back of his neck, as to be an object of derision. Yet in this absence of "philo-progenitiveness," love of children was a striking feature in his disposition. In this case, we have the sentiment, without the "organ." In the former, we had the "organ," and not the quality.

But you may require facts upon a larger scale. Take then the family of man. Sexual passion is said to depend upon the size of the *cerebellum*.* That division of the brain is largest in the Caucasian, less in the North

* I am acquainted with no fact which tends to evince any especial connection between the *cerebellum*, and sexual feeling. The swelling of the neck, in the males of certain species of animals, proves nothing. That is a tumefaction of the soft, superficial parts

American Indian, and least in the African. "Amative-ness" is strongest in the last, more feeble in the first, and nearly at zero in the aboriginal of this continent.

If you extend your inquiries, from human, to comparative anatomy, phrenology fares no better. In the whale, the brain is absolutely large, yet the animal is dull and stupid. In the canary bird, that organ has more than twice the relative size which it has in man, and there is no remarkable intelligence. To the alligator is assigned a most diminutive brain—perhaps the one thousandth part of the creature's bulk—and he evinces no want of sagacity. According to M. Serres, the *cerebellum* is but partially developed in fish. In reptiles it is nearly annihilated, though the *cerebrum* is large. Are the finny tribes, with all their fecundity, nearly devoid of the instinct connected with the continuance of their races? And are the multitudinous "creeping things," yet more destitute of the propensity, and, at the same time, remarkable for intellectual endowments, to say nothing of moral qualities?

Finally, if the researches of Mr. Lafarque can be re-

which have no connexion with the brain. The evidence is, that in the stag, the enlargement is periodical, coming on in the autumn, and disappearing in the spring. Moreover the fulness of the poll bears no proportion to the propensity of the animal. For although perceptible, it is less in the hog, and the goat, than in the bull, and the horse—as usual, the reverse of what it should be, on phrenological principles.

From the size and extreme complexity of the cerebellar portion of the brain, its uses are doubtless various and important. But what these may be, is not at all known.

lied on, and they are correct as far as my information extends, the principles of phrenology require courage and ferocity in the hare, and the rabbit, a sanguinary disposition in the beaver, and that the ferret be guiltless of blood.*

If then, we can rely upon universal analogy, supported by specific facts, we are authorized confidently to answer, in reply to the two queries, which, as I said, comprehend the points immediately at issue,—First, That those projections of the brain, which are supposed, by the phrenologists, to confer particular qualities of the mind, do constantly occur, and are, without any assignable reason for the exception, unaccompanied by the alleged qualities.

Secondly, many instances have happened, where the qualities in question were present, and without being attended by the cerebral eminences upon which those qualities are said to depend. The former examples, of course weaken, while the latter destroy, the idea of causation, and consequently the doctrine of superficial “organs” in the brain.

* I have not seen Mr. L.’s memoir, but quote from the *American Journal of Med. Sciences* for May, 1839, p. 168. Mr. La-farque’s general proposition I understand to be, that in the mammalia, the form of the head, and consequently of the brain, depends “altogether” upon the mechanical construction of the skeleton, and that this construction is itself regulated by the manner in which the animal stands, moves, and uses its organs of mastication.

In man, the observation is certainly correct. For being intended to maintain the erect, as his ordinary position, his head is globular, with the points of support very nearly under the centre of gravity.

But were these things otherwise—did a more uniform correspondence prevail, than is actually observable between cranial elevations, and mental affections, could we be therefore required to acknowledge the former, as the causes—the exclusive “organs,” of the latter? By no manner of means, since, as I before remarked, the premises would not sustain the conclusion. For by what authority has the epithet “exclusive,” and consequently the notion of distinct “organs,” been introduced into the conclusion? To such an idea, no allusion whatever was made in the preceding part of the reasoning, and there is, of course, no shadow of evidence for its support. Moreover, upon the doctrine of chances alone, to say nothing of the gross improbabilities heretofore shown to attend the hypothesis, the theory of distinct and definite structures upon the superficies of the brain must be rejected. For supposing the combination to exist, as maintained by the phrenologists, it may be casual, or more strictly, it may be due to some common, though unknown source. Or such a union, might *not* be, strictly, one of cause and effect, as portions of the brain may be more particularly employed for special purposes, and thus prove co-adjutative, though not creative.—Or, lastly, the moral may be the efficient power, and the physical enlargement a sequence of its energy. Of all these contingencies, we have examples in the body. Thus, those features of the countenance, which consist essentially of bone,* are very commonly bold, and salient

* If my observation does not deceive me, most people have the nose rather concave than otherwise. Yet I think, in a great majo-

in men eminent for their abilities. Length of heel *aids* the agility of opera-dancers; while the muscles of the face become strong and prominent, through frequent indulgence in violent passions. Yet that, with regard to the cephalic mass, any one of these possibilities, or any other imaginable conjecture, corresponds with the fact, I do not vouch. Nor can the point be possibly determined, so profoundly ignorant are we of the whole subject. It suffices, however, for our purpose, to prove, that the notions of the phrenologists possess not a whit more of verisimilitude, than an indefinite number of guesses, which might be made, with equal, or greater plausibility.

But it may appear, gentlemen, a waste of time to de-

rity of instances, persons of very distinguished talents have that feature convex, and often remarkably so.

The chin, however, affords the best exemplification of a combination, far more frequent, than any phrenology can boast of; where, nevertheless, to speak of cause and effect, would argue insanity. I do not remember to have seen the visage, bust, or picture of a very distinguished man, in whom that part of the face was small, and very receding. And if the rule be applied to races of men, and classes of animals, it holds, perhaps, without exception. Thus the chin is most prominent in the Caucasian, less so in the North American Indian, and least in the African, whose flat nose is more-over well known. As you descend, to monkeys, dogs, &c., with the declining intellect, the chin diminishes, and recedes until, low in creation, it is no longer found.

Yet to avoid misapprehension, I must add, that in different members of the human family, no reliance can be placed upon the converse of the ratio which has been stated. I have repeatedly seen all the features cast in the finest mould, and there was, notwithstanding, no mind to accompany them.

tain you with solutions, conceivable or inconceivable, of a false assumption. Nevertheless, something of the kind seemed requisite to the rounding off of the argument. That is now effected, and it has, I hope, appeared, that, by a strange felicity, the dialectics of our friends are contaminated with every fault which can attach to a train of reasoning. Their general allegation, being addressed to our ignorance, is of no value. Their special affirmation involves an error of fact, proved by an induction of particulars, too copious to admit of a doubt. And lastly, their conclusion is illegitimate, and would be therefore inadmissible, although there were some force, in either of the premises, from which it is derived. It follows, consequently, First, that whether we comprehend causation, general or particular, is immaterial with regard to our present inquiry. Secondly, observation does *not* establish a coincidence between the magnitude of certain cerebral eminences, and the intensity of certain processes of the mind. Hence, unavoidably, the proposition which we have been examining, the second of the series, has been proved unfounded. But that proposition is the sole logical basis of its predecessor—the fundamental tenet of phrenology. That tenet must, therefore, share the same fate. In other words, THE “ORGANS” OF OUR FRIENDS ARE THE CREATURES OF THEIR FANCY.

The first and second points, gentlemen, which were to be discussed, having been now disposed of, we come to the third, and last. This will not detain us long, and is in the following words :

“That the organs of the various faculties of the mind are situated upon the surface of the brain, and to that sur-

face, and consequently to them, the skull is secondarily moulded, and with great accuracy. Hence depressions, or elevations in the former, will cause corresponding inequalities in the latter. But these inequalities are readily perceptible, and, being formed of bone, are permanent, and thus enable the professor of phrenology to determine the character and talents of any individual, living or dead, whose head may be subjected to his examination."

But why, some may ask, should we trouble ourselves with such a statement? It has been fully proved, that the "organs" contended for by the phrenologists, have no known existence, and that the greater or less amount of local, and superficial cerebral deposits, does not affect the mind. Wherefore then should we inquire in what manner, or to what extent, those deposits indent the cranium? Can the facts, when ascertained, be employed for any useful purpose? For none, that I am aware of; yet we will, nevertheless, pursue the inquiry. For I can assure you, that it was not more difficult to dislodge Charles XII. at Bender, than it is to drive a genuine theorist, from any opinion which he may have once thoroughly imbibed. And, unfortunately, from a law of human nature, the more untenable a whim, the more pertinaciously it will be maintained. Although, consequently, *you* are satisfied, I am by no means sure that such is the case with all our friends, and to them therefore, additional facts, and further argument, may prove not altogether superfluous. Yet I have other reasons for continuing the investigation. The proposition now to be investigated contains a portion of truth, and care must be taken, that this be neither

exaggerated, nor perverted. Moreover, there are several particulars appertaining to our subject, not hitherto communicated, and of some importance. That these should be easily recollected, we require a connecting medium, and phrenology will answer, for that purpose, nearly as well, as if it were tinctured with verity—contrast forming a strong link in the association of our ideas.

No doubt can then be entertained of the correctness of the observation, that the skull is secondarily and very precisely adapted to the brain.* If, therefore, the *cranium* be sawed open after death, and viewed from within, the eminences and depressions of the bone will be exactly the reverse of those of the parts beneath. Thus far then, the phrenologists are right. But these inequalities cannot be ascertained, with any certainty, during life. For the cranium is composed of two plates, connected by a more spongy material, and these plates are never altogether parallel. "In youth," says Sir Charles Bell, "the skull has its proper arrangement, but with irregularities. In old age the skull becomes irregularly thick at some points, and at others thin, and almost transparent. There are specimens in the museum of Windmill-street, where the thickness of the skull-cap varies from *half an inch to the thinness of common paper*."† The facts here stated are known to every anatomist, so that it is entirely impossible, in any given case, by examining the superficies of the head, to say what promi-

* The brain acquires its shape in the first instance, and the skull is afterwards moulded to it.

† Bell's Anatomy, Vol. 1st, p. 105. New York, 1827.

nences exist in the brain, and what do not. There may be internal inequalities, amounting to nearly half an inch, of which there are no external signs.

Nor is this general uncertainty the only source of error, in attempting to deduce internal projections, from external protuberances, or depressions within, from hollows without. For the two plates of the skull separate just above, and behind the eye-brows, and thus form a couple of cavities called the frontal sinuses. Of these the magnitude is very variable, nor are there any exterior indications by which their extent can be determined, with any degree of certainty. Ordinarily, they are largest in persons having prominent brows. But no reliance can be placed on this circumstance, for during the last winter, searching in the museum, for a cranium to illustrate this point to the class, I found a head, in which, from its appearance, I supposed these cavities to be small, yet, upon examination, they were unusually extensive. Sometimes, though rarely, according to Meckel, they do not exist, while in other instances, they are half an inch in width. Sir Charles Bell says, they sometimes extend "through one-half of the frontal bone," which would be, in many persons, beyond the commencement of the hair. In one case they passed into the parietal—the middle bones of the head. But this was an instance of monstrosity. Mr. Combe indeed maintains that all large frontal sinuses are the result of disease. He is mistaken however. Would Mr. C. esteem every man's nose to be morbidly enlarged, which should exceed, what he chooses to consider, the regular, and healthy standard? The truth, I apprehend to be, that in the animal economy, it is of no great importance

whether the nasal promontory, or the frontal cavities be great or small. And therefore that, in respect to them, nature, as is her wont under such circumstances, indulges herself in some vagaries.

Whether this conjecture be well founded or not, it is admitted that these spaces expand, as we advance in life. This results from a gradual absorption, and consequent recession of the anterior portion of that part of the brain. As this is removed, the inner plate of the bone follows, the outer remaining stationary, but augmenting, up to a certain period, in thickness. With increasing years then, the frontal sinuses enlarge, from the shrinking of the "organs" of color, &c.* Now does our power of receiving the impressions which these "organs" are supposed to convey, wane, as we advance from adolescence to mature manhood? Such should be the fact; but is there the slightest reason to suppose it true, or do the phrenologists themselves contend that it is so?

But has no method been devised, you will naturally ask, for obviating the difficulties thus presented, by cavities so long, and so well known? O, yes, various expedients have been proposed. Of these, one, and one only, will suffice. It is to the effect, that the extent of the frontal sinuses, whether great or small, bears too inconsiderable a ratio,

* The seat of vision, it should be borne in mind, is in the posterior part of the brain, several inches distant from the phrenological site of "color." While the "organ of tune" is yet further removed from the internal termination of the auditory nerve. And if by "form," tangible shape be meant, we have the entire mass of the brain interposed, between the "organ," and the probable locality of the sense of touch.

to the size of the "organs," to produce an effect, at all material.

To judge of the completeness of this explanation, let me recall to your recollection, what you must all have observed. In bald persons, the general contour of the head is ordinarily so uniform, that no eye or finger can detect any sudden, or considerable inequality. This evenness of outline is so perfect, that the *cranium* admits of a polish like marble, and skull-caps have, heretofore, been converted into drinking-cups. Yet under this almost unvarying surface, lie the "organs" of the phrenologist, inducing, as he contends, by their greater, or less projection, all the infinite, and striking diversities, observable among men.

But the following formula will, perhaps, best exhibit the felicity of the proposed solution. The magnitude of an "organ" we will call A, while B shall represent its influence in modifying the disposition. Now when A is equal to half an inch, the occasional width of the frontal sinuses, B is inappreciable. But when A, in its turn, becomes inappreciable, then does the power of B enlarge, with the requisitions of the phrenological theory -- no adept, on any occasion, encountering, as far as I have ever heard, a violent nonconformity between the "developments," as they appear to him, and the character, as he knows, or at any rate asserts it to be. And this happy coincidence is the more remarkable, since, according to the principles of this exact science, our "organs" are controlled by temperament, &c. ; that is, by causes which produce, during life, no visible change, and leave, after death, no perceptible trace of their former influence. Yet have these

facts, stated by themselves, and the host of objections, equally insuperable, urged by others, no power to shake the firm nerves of the phrenologist. Upon simply observing the exterior of a skull, accidentally taken from a museum, or a charnel-house, he will undertake to delineate, as minutely, and as positively, the peculiarities of him to whom that relic of mortality formerly belonged, as if the easel of Raphael had furnished his portrait, or the pen of Tacitus had painted the man !

The third, and last of the enumerated propositions, having been now refuted, a brief recapitulation shall close the argument. It has then, I hope, been proved to your satisfaction—First, That there is reason to disbelieve the existence of superficial cerebral organs. Secondly, That if we possess such organs, it is certain no proportion exists between their size, and their power. Thirdly, That while we are alive, the actual extent of any inequalities, situated upon the surface of the brain, can never be accurately known, and although after death, dissection will reveal the facts, yet is the knowledge then useless, because no physical changes have ensued from the operation of extraneous causes, which, during life, were always in action—always more, or less efficient, and sometimes paramount. It follows unavoidably, that phrenology is, theoretically, untrue, and, in practice, confessedly and demonstrably false.

I might now, perhaps, gentlemen, with propriety close my remarks. But there are some incidental particulars requiring further attention. Among them, two promises, formerly made, are still to be complied with. These I shall accordingly proceed to fulfil, and having done so,

will then lay before you some circumstances connected with our inquiry, which appear to me worthy of consideration. Having accomplished these several objects, your patience will be no further taxed.

When speaking of the tendency of phrenological speculations, I expressed my conviction, that, traced to their legitimate conclusions, they are adverse to materialism, and leave undisturbed the question of human responsibility. The evidence in favor of these respective statements, shall now be produced, and to prove the first, the alleged functions of the "organ of weight" will, I believe, answer our purpose. It is quite small, and has been located rather above, and near the inner corner of the eye.

We feel, let us imagine, an inclination to learn the weight of a lump of lead, by poising it in the hand. The desire, and every step taken to gratify it, in this manner, are due, if I understand the phrenologists, to the part under consideration. Let us then see, in detail, what this "organ" accomplishes.

First, The mind must be conscious of the alleged desire. Second, That feeling operates on the will. Third, The will causes the motor nerves to exert their peculiar power. Fourth, That power compels the muscles to contract. Fifth, The nerves of touch are now impressed. Sixth, That impression has to be transmitted to the *sensorium*, be there perceived, and thus to excite the ideas of individuality, outness, time, and space. Seventh, We have to be conscious of the amount of muscular effort requisite to sustain the piece of metal. Eighth, Memory has to recall our previous experience, under similar circum-

stances. Ninth, A comparison has to be instituted, between former observations, and present convictions. Tenth, All these preliminaries having been satisfactorily adjusted, the judgment is invoked, and after due deliberation, decides, that the suspended mass weighs, we will say, a pound.

Here then we have a decade of particulars, and these by no means include every feat ascribed to this "active" little "organ." But enough. For if any whim can be conceived, beyond the pale of a sane imagination, it must be the idea, that a diminutive mass of cerebral matter, four-fifths water,* and as simple in construction, as small in quantity, can *per se*, and in virtue *solely* of its position, produce all the results, physiological and mental, which I have enumerated. Are we not, consequently, authorized to assume, that every *intelligent* phrenologist is constrained to insist upon the reality of a power beyond his "organs," that shall explain the phenomena of which he is alike—the subject and the witness?

Having then proved, as I formerly intimated might be done, that the force opposed to materialism, by phrenology, among phrenologists, is irresistible, you perceive with what propriety the term *friends* has been applied to those whose opinions I have been obliged to controvert in part. Friends they are—but not allies. For although we gladly receive among us, every phrenologist who admits the legitimate consequences of his own doctrine, yet at his hands we can accept of no aid. We must

* The substance of the brain has been found, upon analysis, to consist of eighty per cent. of water.

not argue *phrenologically* in favor of even the good cause. The purity of truth will bear no soil, and is as certainly defiled by falsehood in the premises, as by falsehood in the conclusion. The assistance, therefore, of our good friends, luckily superfluous, has to be declined.

The phrenological hypothesis being then incompatible with materialism, let us see, in the second place, whether it have any bearing upon the doctrine of human responsibility.

For a long time this fundamental proposition appeared to me, I confess, irreconcilable with the notion of distinct "organs" in the brain. Since, if certain qualities of the mind, and consequently the actions of which they are the source, depend upon large, or diminutive cerebral deposits, I could not see why a person should be held more justly amenable for his bad conduct, than for defective vision, through a natural imperfection in his organs of sight. Further reflection has, however, convinced me of my error. Because the phrenologists, aware of the great changes which, from moral causes, our characters undergo, as we pass through life, contend, as indeed they are obliged to do, that our "organs" experience corresponding alterations. Thus a pursuit, closely followed, will, say our friends, confer the requisite "developments." Or if these previously exist, and be not called into action, they gradually shrink until their functions cease.

That the soft substance of the brain may, from adequate causes, be rapidly absorbed, or deposited, is possible enough. Yet it is somewhat difficult to suppose that, under any circumstances, the solid bone of the skull ex-

pands, and contracts, in accordance with the sudden and complete moral revolutions, which individuals so often experience in this eventful world. Moreover, the reciprocity contended for, between causes and effects, and effects and causes—the production of ideas by “organs,” and the genesis of “organs” by ideas—is somewhat difficult of digestion. But that does not concern us. The averment that these strange alternations do actually occur, forms an integral part of the phrenological system, and if this be adopted, they must be likewise admitted.

The view now taken, exonerates phrenology from the imputation of impugning a principle of the highest importance, to which, at first, it was apparently opposed. For all will agree that our good qualities require to be cultivated, and exercised, and that our bad passions grow upon us by indulgence. The necessity, and effect then of nurture on the one hand, and of discipline on the other, being conceded, there can be no objection to the assertion that mutations in the mind are followed, and, if you please, strengthened, by changes in the brain. The mental is the essential state, and if that be sound, or be capable of becoming sound, through moral and religious influences, the “organs” of the phrenologist he may afterwards adjust according to his good pleasure.

We now come to the collateral topics, which are to close our investigation.

You may, very naturally, ask, is there nothing whatever to give a color to the doctrines which we have been examining? Erroneous hypotheses are, we know, usually the result of inaccurate observation, or hasty, and incorrect generalization. Are there, consequently, no

facts to furnish phrenology with, at least, a seeming foundation?

An inquirer, of very moderate caution, can, I think, discover nothing of the kind. But I before remarked, that, if a sufficient number of heads be examined, any required combination of cephalic prominences, and mental qualities may doubtless be discovered. Those consequently who consider a coincidence of this kind a sufficient basis for a *theory*, have, of course, a fact from which to take their departure. Beyond this, there is, in my judgment, nothing affording the slightest countenance to the notion of superficial specific "organs" in the brain—the idea, be it constantly recollected, which constitutes the essential characteristic of phrenology—no person supposing or contending, that every part of the cephalic mass is equally, and constantly employed, whatever may be the feelings or the trains of thought occupying the mind. But as I have been charged with being over fastidious in the admission of what are called theories, the better plan will be, to enable you to judge for yourselves. I will therefore state a few particulars, more or less probable, which have been thought, by some, favorable to the doctrine of Gall. From these, however, I shall exclude, as not requiring especial notice, sundry analogies, which have been traced by our friends, between brain on the one hand, and muscle and bone! on the other.

But for the facts. First, then, I believe, that like some of our corporeal maladies, many of our mental peculiarities are transmitted from parents to offspring.

Secondly, it is admitted that a brain weighing only

about thirty ounces, or less, is so incapable of performing its functions, that idiocy results.

Thirdly, I am inclined to believe, that if you take one thousand persons with heads unusually large, and one thousand with heads unusually small, the former will, collectively, surpass the latter.

These three admissions I shall group together, as belonging to the same category. Having disposed of them, I will then lay before you two facts, as I esteem them, deserving of more consideration.

Of the varieties in human character, I have, in a preceding lecture, spoken at large. But so far as our peculiarities depend upon inheritance, their existence is entirely adverse to phrenology, they being stamped upon us, not only before any "organ" is developed, but before a vestige of the brain can be observed.

The second and third concessions go to show that, in relation to the power and action of the brain, something may, as I formerly remarked, be allowed to magnitude. But this general admission is of no avail whatever to the phrenologist, since it proves nothing with regard to their doctrine of specific "organs." Nor are we at liberty to infer, because a ratio, more or less loose, obtains between the size of men's heads and the extent of their abilities, that, *therefore*, a slight accumulation of cerebral matter upon A.'s crown, renders him an enthusiast in religion, while the want of such a deposit leaves B. no better than an atheist. And so on, of the presence, or absence of every imaginary "organ."

Nevertheless, since the brain forms the material instrument of thought, it may well happen that quan-

tity is, to a certain extent, indispensable to its efficiency. Nor is there any difficulty in further supposing that a full-sized, well-formed head will perform its functions, whatever may be their nature, more effectively, than one which is diminutive, or ill-shapen. Yet these opinions, plausible as they are, must not be pushed too far, for the Patagonians have, it is said, very large heads, and the Georgians and Circassians confessedly enjoy the finest in the world. Yet the first are among the rudest savages, and the last are so low in intellect, that they continue in a state of semi-barbarism, and so debased in sentiment, as to sell their daughters to the harems of the Turk. *Properly restricted*, the facts will, I believe, stand thus: That if we compare a great number of persons having big heads, with an equal number much less amply provided in that particular, all of whom belong to the same race, live in the same society, and have been trained and educated, as far as possible, alike, then will the aggregate talents of the former exceed those of the latter. Under other circumstances, or between individual and individual, mere bulk of head, within ordinary limits, is an element of no appreciable importance.

We come now to the two more important facts, for such I esteem them, which I promised you. There is first, in my opinion, sufficient evidence to induce the belief, that the more forward parts of the brain, in anatomy, the anterior lobes of the *cerebrum*, are principally employed in carrying on those operations of the mind, which require the exercise of our reasoning powers.

Secondly, I hold it to be certain that, comparing races of men, and classes of animals, the intelligence will be

in proportion to the projection of the said lobes. To individuals of the same family, the rule does not apply.

My reasons for the former opinion are as follows:—First, when fatigued by long-continued, and intense thought, we feel uneasiness in the forehead. Secondly, the case of the student, who had lost a portion of the frontal bone, is in point. Thirdly, the foreheads of children grow more rapidly in early infancy, than the other parts of their heads. Now every observer knows, that their reasoning powers, being soonest required, precede, by years, the manifestation of their sentiments—for example, their feelings of modesty, and sense of religion.

My second proposition is proved by the application of what is called the facial angle. We are indebted for the suggestion to a Mr. Camper, who, noticing a remarkable difference in the prominence of the foreheads of Europeans and Negroes, adopted the following method of determining the extent of the inequality. He supposes a line to be let fall from the most projecting part of the forehead, and, disregarding the nose, to be continued on, until it strikes the most anterior part of the bony plate which supports the front teeth, or the teeth themselves. The second line commences at the opening of the ear, and intersects the former at the base of the nose, being parallel with the floor of the nostrils. The interior and superior angle, formed by the intersection of these two lines, is the one termed facial. It is by no means so accurate a mode of measurement, however, as one for which we are indebted to the phrenologists. They take the distance directly from the auditory passage, to the most projecting part of the forehead. In this man-

ner, sundry errors are avoided—among others, the greater, or less expansion of the frontal sinuses—an expansion which gives to owls, and elephants,* the appearance of more wisdom than they possess. But Camper's method is sufficiently correct for ordinary purposes, and far more convenient in practice, particularly for comparative estimates. By habitually observing faces, you may, without any breach of politeness, determine within a narrow limit, the number of degrees subtended by any countenance, of which you can obtain a view, in profile.

The following table will show the application of this angle to the different families of men, and the inferior animals :

In the European, the facial angle extends from 85 to 90 degrees.

Asiatic,	"	. . .	75 to 80
American Indian,	"	. . .	73½
† African,	"	. . .	70
Ourang Outang,	"	. . .	67
Other Monkeys,	"	. . .	from 65 down to 30

Dogs still less, and so on.

* According to Cuvier, the sagacity of the elephant has been much exaggerated. He does not esteem it superior to the most intelligent of the canine race.

† There are seven or eight other particulars, in addition to the three that I have mentioned, in which the European differs more widely than the African from the anatomical structure of the brute creation. What is singular, there is no instance in which this is reversed.

I may add, and the remark is deduced from extensive, and, as I think, impartial observation, that, while the Negro possesses many estimable moral qualities, in operations, purely intellectual, he is inferior to the Caucasian.

The lowest in the scale, of any animal which I have seen, is the ostrich. Its head is quite flat on the top, and the keeper assured me it was the most stupid of birds.

It is further worthy of note, that the forehead is more projecting in children of three or four years of age than in adults. In the former, the facial angle is sometimes expanded to 90 degrees, and I before mentioned, that in them, the reasoning powers being most early required, are soonest developed.

Lastly, the sculptors of antiquity, while they added but little to the absolute magnitude of the heads of their heroes and gods, enlarged the facial angle to 100 degrees, to indicate mental superiority, thereby showing the impressions, entertained with regard to the effect of this conformation of the head. But after all, little is the necessary connection, between, either the shape, or the bulk of the brain, and the intelligence of the individual, as the following examples will prove. A case has occurred, where, in consequence of the effusion of water *within* the ventricles, the cerebral substance has been absorbed, until, to appearance, little more than membrane was left. On the other hand, a head has been examined, where, from pressure by water, without, and upon the brain, it was compressed to what was represented as little more than a *knob*. One of these instances happened in Philadelphia, the other in London. Both were observed before phrenology was thought of, and rest, I believe, on undeniable authority. *In neither were the mental faculties materially affected.*

But that the shape of the brain may, by pressure, during infancy, be altered into any desired form, without appa-

rently affecting its operations, is well known. The Flat-head Indians, to this day, compress the seat of the intellect, so as to correspond with the name which they have received. In the Incas of Peru, however, the process was carried to the greatest extent, the cranium, in them, having been elongated like a sugar-loaf. Now as the Incas were the governing race, it is not to be presumed they had less talent than those whom they ruled. And there is, or was, in the Museum of St. Thomas' Hospital, the skull of a Charibbeean chief, noted for his knowledge of botany, in whom the forehead was not convex, but concave.

I have thus, gentlemen, laid before you all the facts within my knowledge, which have, by some, been supposed favorable to phrenology. To me they furnish an opposite inference, because, by referring to the larger divisions of the brain, they tend to exclude the idea of minute organs.

But you may feel an inclination to inquire, whence it is, that so fantastic a scheme as phrenology should be entertained by men of intelligence, and professed by men of candor. In my estimation the circumstance is not at all surprising. Read the history of the race—observe what it passing around you. Omitting the witches and spectres of other days, phrenology is not more incredible than homoëopathy, or animal magnetism—yet these have their votaries. Or if any one imagines, that one of these whimsies is less absurd than another, let him amuse himself, by comparing the nonsense of maintaining, that to restore a man, drunk with wine, you must drench him with brandy—the folly of asserting that the hour of the

day can be told, by looking through the brain, at a watch behind the head—and the pleasant conceit of a “natural language” for each “organ.”

If, indeed, men could be induced to pay a little attention to what passes within themselves, discrepancies of opinion, however wide, would not only excite no astonishment, but would be found as perfectly in accordance with the laws of mind, as the startling results of some chemical experiments conform to the laws of matter. These make the ignorant gape, and stare—those excite the bigot, and the fanatic to wrath, and persecution. Amazement yields to the cultivation of physical science—charity would spring from the study of mental philosophy. For this would teach us, that while the moral sense discriminates the right from the wrong, reason alone, if induction be employed, has to detect the difference between verity and falsehood. But sound ratiocination, presupposes accurate data, and it is perfectly marvellous how small is our amount of exact truth. Yet supposing the facts well observed, the discursive faculty is exposed to many perturbing influences—feeling*—passion—pre-

* The religious sentiment, when undisciplined, best illustrates, from its depth, and permanence, the perverting power of strong impressions. Thus the *total* depravity of man, forms a favorite dogma, with many sects. Now as a question of fact, which it exclusively is, the remark possesses the precise degree of truth, that would belong to the assertion, “Every human countenance is as black as jet”—no character being entirely faultless, nor any face

White “as the fleeces of descending snow.”

Moreover, can a person, capable of comparing two ideas, really

judice, &c. &c. Now every one of such causes cannot but act in proportion to its intensity, and the conclusion at which we ultimately arrive—the opinion which we finally adopt, *must* be the compound result of every power that has contributed to its formation. For it is nothing

esteem Burk the murderer, no worse than Howard the philanthropist, or maintain the virgins of the land to be *totally* depraved females, and consequently on a par with the occupants of the stews?

Where obvious truisms can be thus lost sight of, sad is the havoc, it may be well imagined, which our sentiments suffer. Take the following as an example. “Much comforted,” dots a missionary in his journal, “by reading a Sermon on the Justice of God, in the Damnation of Sinners.” Much comforted by contemplating, in anticipation, the inexpressible torments, for endless ages, of countless myriads of those very beings whom he was commanded to love! In the imagination of a fanatic, the joys of Heaven lose their zest, unless the more pungent by contrast.

It cannot be doubted, however, that the assent accorded to notions so monstrous, is very generally nominal—the words being the mere modes of speech, of a particular circle, and passing without examination, convey no meaning. Or if an attempt be made to comprehend their real import, the understanding is bewildered by the vividness of the associated feeling. The mind, at the same time, resolved to adhere to certain premises, acquiesces in the alleged deductions, which, in its confusion, it conceives may be sound, and fears to reject, lest by so doing, the former should be weakened. Hence no scrutiny is instituted into the logical accuracy of these deductions. The judgment passes no sentence upon their conformity, or non-conformity, to known truth; nor is reason invoked to impart just confidence in matters of clear fact, or to inspire us with full reliance on principles, more worthy of trust, if that be possible, than facts themselves. What opinions, therefore, under such circumstances, may not be—have not been, adopted, in all sincerity?

to the purpose, whether it be the substratum of mental, or of physical phenomena—whether mind, or matter, constitute the subject of investigation. Beings constituted as we are, cannot conceive an occurrence which has not its regular antecedent—in common parlance, an effect without its adequate cause we are unable to comprehend. And it is altogether certain, that in neither the moral, more than in the material world, has observation hitherto detected an insulated event. The business of the philosopher, therefore, in the one creation, as in the other, is to trace the order, in point of fact, ordained—in other words, to demonstrate the laws, which, special interpositions excepted, are appointed to govern all things—mental or physical, here below.

From the principles now announced, gentlemen, you can readily perceive why the mathematical, are the only truths, in which mankind *can* universally agree. Not because the evidence, on which they rest, is of so superior an order, but because

—“ At the very name of Mathematics,
Imagination folds her wing!”

In simple prose, the moment we become engaged with a demonstration in geometry, every feeling dies within us, and the discursive faculty, being now the only operating power, *can* conduct us, but to one result. The fancy of a theorist is thus lulled to rest, or he would, I am persuaded, declare, with perfect sincerity, “we consider”—a favorite logical formula with at least one phrenological writer—“we consider” the three angles of a triangle as greater, or less, than two right angles. Whether *plus* or *minus*,

would depend upon the demands of his hypothesis, and the quantity, and quality thus assumed, would then be held to prove the correctness of the whim, from which the assumptions were themselves derived. I repeat, therefore, that to me, there is nothing wonderful in the circumstance, that men of intelligence should be believers in the doctrines of phrenology.*

But you may wish to have another difficulty solved. You may desire to know how the statements are to be accounted for, which we have all seen, and heard of—the wonderfully exact delineations of character, deduced from the mere examination of the heads of individuals?

There is, I conceive, no mystery in the case. For, in the first place, something may be fairly allowed to exaggeration. Secondly, a person of talent, like Spurzheim, travelling about the world, to observe heads, and doubtless countenances also, will surely acquire a quick and deep insight into the peculiarities of individuals. Now it is no breach of charity, to suppose, in such a man, a leaning, perhaps an unconscious leaning, in favor of that doctrine upon which he had staked his hopes of wealth, and fame. He might, therefore, not be over anxious to analyze the sources of his knowledge,† and would be apt to ascribe to

* Some persons may suspect that I have pushed my argument too far. I do not think so, for I know those who resist with sincerity, the combined force of *mixed* mathematics, and ocular demonstration, because they are inconsistent with a much cherished notion.

† Although the “organs” are so legible, that “he who runs may read,” casual aids are not despised, and sometimes prove convenient. When Zerah Colburn, whose powers of calculation excited

phrenology, what was, in fact, due to physiognomy—a science far from certain, indeed, but having no slight foundation in nature.*

so much astonishment, was presented, Gall, knowing him, from circumstances, to be an American lad, had no difficulty in discovering the proper “organ.” An eminent British phrenologist, to whom the boy was shown, having no such clue, could discern no unusual “development” about Colburn’s head.

* Much reliance may be occasionally placed on the indications of the countenance. Thus Fielding declares, he never saw a man with a *slavering* smile, who was not a rogue. My observation confirms the remark, as the following occurrence will prove. Conversing with an intimate acquaintance, a person whom I had never before seen, came up, and after exchanging a few words, passed on. When he was out of hearing, I inquired if he were not a great rogue? “Why, yes,” was the reply, “but what makes you think so?” I then quoted my authority.

The *philosophy* of physiognomy is perfectly intelligible. Muscles which are thrown into frequent, and vigorous action, acquire proportionate bulk, and strength. The former circumstance makes them more prominent, the latter enables them to overcome their antagonists. Now particular passions cause particular muscles to contract with great energy. Thus good humor elevates our brows, rage renders them lowering, anger compresses the upper lip against the teeth, scorn draws up the corners of the mouth. We can readily see, therefore, that if these feelings be often, and strongly experienced, a corresponding cast will, in many cases, be given to the lineaments of the face.

The final cause is here as obvious as the efficient—Nature intending the expression of the countenance, to serve as an external indication of internal emotions. We are thus promptly, and instinctively warned of the evil intentions entertained by others, whose smooth phrases might otherwise beguile us into fatal security—language, according to the observation, ascribed to Talleyrand, being given us to *conceal* our thoughts. To such a purpose

Moreover we may rest assured that fortunate *guesses*, when favorable to the *examinees*, would be vaunted far and wide. Whereas failures, if an hundred times more numerous, and more glaring, would be carefully concealed by all the parties interested.

Finally, you may like to be informed, whence it is, that phrenology has met with such favor, on either side of the Atlantic. The reasons are, I think, plain, and satisfactory. For, in the first place, every one endowed with even moderate curiosity, wishes to understand something of the connection which exists between mind and matter. Secondly, we are all fond of acquiring knowledge expeditiously, and without trouble. Lastly, not a few are furnished with a very pleasant topic of conversation, by having their fine developments pointed out. Now all these inclinations phrenology, as taught and practised, is calculated to gratify*—with what truth, although it be a work of supererogation, we will for a moment inquire.

I have already shown that phrenological principles, were they perfectly true, could throw no light whatever upon the mysterious association of our ethereal, and grosser natures. Knowledge, on this point, consequently, so far from being readily accessible, is not attainable at all. But compare what our friends promise, with the chilling prospect presented by those who have studied

it is certainly far too often applied, and not unfrequently counteracted by the uncontrollable play of the features.

* The venders of phrenological opinions are to the full as liberal as Goldsmith's fortune-teller, although she did not, in the estimation of the good Vicar, give his daughters the worth of their money.

mental philosophy. Were an applicant to address himself to a person of this description, the reply would be, "Our faculties are straitly limited, many things, therefore, are beyond their reach, and among these may be ranked the essence of the mind, and the mode in which it is associated with matter. As to the laws indeed, impressed upon that mind, much and highly useful information may be imparted, but this, like all other valuable learning, must be the reward of labor and study."

Now let the same inquirer consult a disciple of Gall, and nothing can be more agreeable than the contrast. No nice distinctions to puzzle—no abstractions to bewilder—no insuperable barriers to circumscribe his acquirements, and mortify his vanity. He may know—he may know—I am sure I cannot tell what he may *not* know. But of this I am certain—his knowledge, whatever its amount, costs him nothing. Let him observe the head, consult the chart—summon the genius of phrenology—that is, invoke his imagination, and there bursts upon the mind,—all that phrenology can teach him.*

But in this age of steam, the despatch with which phrenology instructs us, though a great, is by no means its

* Whatever may be the actual, the professed amount of intelligence is by no means small. Thus the "organ of weight," in addition to what was formerly stated, is said to give skill to the archer, dexterity to the skater, and adroitness to the rope-dancer. If, as I conjecture, the "organ" is held to *explain*, as well as perform these several feats, it has the credit of superseding, so far as they are concerned, the study of mathematics, optics, and the resolution of forces—to say nothing of collateral sciences, anatomy, physiology, &c. &c.

sole, or least recommendation. It undertakes to inform philosophers, where but for its assistance, their ignorance would be perfect. The following is an example of the clear light thus shed upon a problem, otherwise, involved in complete obscurity.

The mind has obviously the power of measuring, with more or less accuracy, the lapse of time. How this is accomplished, the cultivators of mental science are, I believe, not at all aware. Now hear the phrenologists: The "organ of time" confers "the power of conceiving time." While "the special faculty seems to be the power of judging of time, and intervals in general."* Dull must be the intellect, that does not perceive, and ungrateful the disposition, that does not acknowledge so bright a ray amid so deep a gloom!

But the discussion is ended. A discussion, designed throughout, to prove the doctrine of Gall, and his disciples, a freak of the imagination—a fanciful toy, where-with a visionary temper, spurning the narrow bounds of reason, might harmlessly disport, did not error unavoidably contaminate that mental purity, which it should be the highest effort of us all to maintain. Nevertheless, in the views which have been urged, I by no means flatter myself, that every one will concur, who has honored me with his attendance. Mistaken opinions, once imbibed,

* Mr. Combe's System of Phrenology, p. 407.

The phrenologists, it is to be feared, have not studied, with due diligence, Dr. Campbell's Philosophy of Rhetoric. There is a chapter, near the close of the book, which I need not designate more particularly, well worthy of their attention.

are not readily surrendered, and if a book have been written, the case is, of course, hopeless. Yet for those among you, gentlemen, not already phrenologists, something, I would fain hope, has been done—something to keep you within the ancient land-marks of truth, and philosophy. Content with the amount of *attainable* knowledge, and satisfied to acquire the boon by the toilsome, and *therefore* delightful exercise of the faculties, derived, as much from the goodness—as from the wisdom of your Creator.

P. S. Since the foregoing part of this Discourse passed beyond my control, I have read in the London Medico-Chirurgical Review, for April, p. 519, that at a sitting of the Royal Academy of Medicine, in Paris, M. Bouillaud introduced the seat, or locality of the phrenological organ of language, and narrated several cases in confirmation of Gall and Spurzheim's opinion, in relation to the supposed site of that organ. Nearly fifteen years ago, Mr. B. had, it seems, collected sixty-four cases, to show that the anterior lobes of the *cerebrum* enable us to speak.

Of none of these instances, had I before heard, nor are any of the details given. But if the accounts corresponded with those which are subsequently related, of three cases, it was full as well to withhold them, for certainly they are sufficiently wide of the mark. Moreover it was stated in argument, and not denied, that “numerous facts have abundantly proved that the faculty, or power of speech has remained intact, when the anterior

lobes of the brain have been seriously injured, or diseased; and on the other hand, that this faculty has been lost, when no discoverable lesion of these parts has been afterwards found."

Finally, M. Cruveilhier remarked, and his statement was not controverted, "I have related in my *Pathological Anatomy*,* the case of an idiot, in whom *both the anterior lobes of the brain were wanting*, and who yet exhibited *no alteration in the faculty of language*."

Now these lobes, it is to be further remarked, furnish very nearly, if not quite, a moiety of the phrenological tenants with house and home, and what became of them, when destitute of local habitation, is not mentioned. Some, doubtless, took their leave, but had "individuality" been of the number, what would have remained to the poor idiot?

* Not being able to find the case, in the edition of Mr. C.'s works, within my reach, I can give no further details of this interesting example of monstrosity. It will be observed, however, that the deficiency of the anterior part of the *cerebrum*, was followed by a deprivation of the reasoning power, as the unfortunate creature was an idiot.

ON THE
SENSE OF TOUCH.

ON THE
SENSE OF TOUCH,

BEING AN

INTRODUCTORY DISCOURSE,

DELIVERED ON THE 6TH DAY OF NOVEMBER, 1837, ON THE
OPENING OF THE NEW COLLEGE, IN CROSBY STREET.

SECOND EDITION.

“If God have no need of our learning, He can have still less of your
ignorance.”—*Dr. South as quoted by Dr. Wiseman.*



P R E F A C E .

SINCE the publication of the first edition of the following lecture, I have carefully attended to all the comments, coming under my observation, of which it has been the subject. In general they have been sufficiently friendly, and to those remarks, which are worthy of notice, I will now advert.

The first objection which calls for a reply, is to the sufficiency of the argument which attempts to show that tradition will not account for the diffusion, among savage nations, of the idea of a Supreme Being.

The theory of original communication, and subsequent and continued transmission, I was obliged to notice, and in doing so, a balancing of probabilities was alone in my power. This I have done, to the extent of my ability, and, I may add, nevertheless, that it appears to me evident, much knowledge must have been revealed to our first parents, but what particulars were afterwards lost, is, of course, a matter of conjecture. Yet supposing the doctrine of tradition to be true, in point of fact, it would still be a question of great philosophical interest, to determine whether the human mind be so constructed, as to elicit, and demonstrate the sublime idea of a Creator of the Universe. My opinion being in the affirmative, I have endeavored to establish it, not merely as an abstract inquiry, calculated to excite the curiosity, but in the hope of benefiting some of my fellow mortals, who will listen to no other species of proof.

Secondly, a distant friend inquires, if man consist of more than one element, where does this combination end, in descending to the inferior animals, or even to vegetables?

I answer, that as regards the human race, my proposition is either established, or it is not. If nay, then it is needless to multiply difficulties, which are already insuperable. If aye, then, in the language of Mr. Locke, we should never permit that which we *do* know, to be disturbed by that which we do *not* know.

Thirdly, it has been stated to me, that after all, I have failed to establish the fact that matter cannot feel, think, &c.

This remark was, of course, made by one not conversant with the dialectic art, as otherwise he would have known, that he exacted more than logic is competent to perform. Who can prove, to adopt the ordinary illustration, that the moon does not consist of green cheese? An unsupported affirmation, it should be recollected, requires nothing beyond a simple denial; the *onus probandi* lying upon him who asserts. But in my own estimation, I have demonstrated the existence of mind, and further, that through its instrumentality alone, we infer the reality of matter. Now if any one who goes with me thus far, will insist that matter also thinks, he must enjoy his opinion, but he ceases to be a materialist—the fundamental tenet of such a person being, that nought, save matter, exists.

Lastly, by far the most elaborate review of my lecture, which I have seen, appeared in the *Churchman* of this city. The editor of that paper, with great zeal, and all the civility which was required, attacked sundry of my propositions. And with regard to one of them, at least, he was right, and I was wrong. For, relying upon information, which was thought trust-worthy, but which proved to be otherwise, I erred, in saying that, antecedently to any external communication, the mind of a person, deaf from birth, had become impressed with the idea of a Creator. Sufficient evidence* has now been adduced, to convince me, that no such instance has been, hitherto, observed.

The admission now made, I am well aware, may, in the judgment of many, prove fatal to my theory, particularly when I add, as I am bound to do, that the difficulty admits, for the present, of

* Vide, Twenty-second Report of the Directors of the American Asylum at Hartford. 1838.

no satisfactory solution. I would remark, however, that although any hypothesis, which comes directly, and unavoidably into collision with one fact, is thereby destroyed, yet the rules of philosophizing do not require us to abandon a conjecture, *for which weighty reasons can be given*, because a single objection cannot be instantaneously surmounted. Greater sagacity, or novel observations may, at a subsequent period, furnish the desired explanation. Thus, for some time, the advocates of the present theories in chemistry, were puzzled by the properties of gaseous oxide of carbon, until Mr. Cruickshank detected the real character of the substance, and settled the controversy.

In the same manner, it was objected to Copernicus, that, although, according to his doctrine, the space separating the earth and stars, varied by the entire diameter of the terrestrial orbit, yet none of the heavenly bodies vary to any great degree, in apparent bulk, and most of them undergo, in that respect, no perceptible change whatever. The astronomer replied, this was true, but it *might* be, the distance between these luminaries, and ourselves, was at all times so prodigious, that with regard to them, our relative position was immaterial. Every one now knows this to be the fact. So by parity of reasoning, as all the functions of the mind are elicited through action on the part of the nerves, a material deficiency in this respect, *may* be followed by imperfect mental results.* And in confirmation of this view, it is certain, I conceive, that a human being, deprived of all his external senses, save that of smell, would be destitute of many of those emotions, which are, nevertheless, exclusively the workmanship of the internal portion of the machine, when its external parts are complete. I adhere consequently, though with diminished confidence, of course, to the views which I have adopted, and advocated.

With regard to the other points assailed in the Churchman, I

* Meckel, without reference to any particular theory, denominates the ear, as it is, the most *intellectual* of the senses. Hence a person, born deaf, being deprived of the most powerful excitant that can act upon the understanding, may well be unable to work out remote conceptions, which a mind, under the influence of all the ordinary faculties, might nevertheless elaborate.

could make, in my own judgment, a successful defence. But it will not be attempted. A general discussion would be the consequence, for which this is not the appropriate place. With thanks, therefore, to the reverend critic, for correcting a mistake, and for being the means of establishing an important fact, in the history of the Human Mind, I send forth a second, and I hope an improved, edition of my Lecture.

DISCOURSE THE FOURTH.

GENTLEMEN,

I AM happy to announce, that through the fostering care of the Regents, and the judicious kindness of the Trustees, our College, opens for the ensuing Session, under circumstances highly favorable. Hence it becomes my pleasing duty, as presiding officer of the Institution, to deliver an address, in some measure commensurate, with the auspiciousness of the occasion. Accordingly I have selected topics of the deepest interest to responsible beings, which a physiologist, who is also a layman, is permitted to treat. For although the functions of the Nerve of Touch be the theme, on which I propose to descant, yet in discussing it, I hope to prove that man differs, somewhat from the dust on which he treads, and, that the vast fabric of the universe, is the work of Omnipotence. But to establish these truths, the ordinary limits* of a lecture will not suffice. A tax therefore will have to be imposed, though unwillingly, upon your patience. Yet those whose

* Hence, the number, and the length of the notes, into which every thing has been thrown, that could be dispensed with in the text.

kindly temper may induce them to bear with some excess, will, I flatter myself, be rewarded by an occasional suggestion, both novel and gratifying. Where my ideas are more trite, the dignity of the subject must plead my apology

Of the five inlets to knowledge, not one is more widely disseminated through creation, than the Sense of Touch. Belonging indeed to the minutest microscopic insects, as it is seen to do,* it is probably co-extensive with animal life.† But as the tactile faculty is most exquisite in the fifth, and that is also the gustatory nerve, to feel and to taste, are, perhaps, in all creatures, associate faculties. In man a capacity to perceive the tangible qualities of matter is diffused, in some degree, over his whole body,

* An animal may be defined, *physically*, an organized substance, having a distinct receptacle for food—that is, some cavity which answers the purposes of a stomach. *Metaphysically*, an animal is a being which has an idea of itself, as contradistinguished from all other things, or existences in nature. But here a difficulty arises. A polypus may be divided into two, and each portion, acquiring a new stomach, is thence forward a new animal. But two may, it is said, be blended into one. Now in that case, what becomes of their previously distinct personal identity? Perhaps, as in a bicephalus terrapin, exhibited some years ago, there are two minds in one body.

† In animalcules, these, or whatever other senses they may possess, must, when compared with ours, be immeasurably acute, since to our dull organs, unless aided by powerful magnifiers, their food, their foes, nay, themselves are imperceptible. Those pests, too, which prey upon us, show a preference for some individuals, and an aversion to others. The predilection of mosquitoes for strangers is well known. Fleas have also their favorites, while there are persons whom they never bite.

but the power resides more particularly in the tip of the tongue, and the ends of the fingers, and toes. In the first, and the last it is seldom called into use, except in cases of deformity, or disease. In the absence of hands, the toes have, to a certain extent, become substitutes for the fingers; and two cases* have been reported to me, on authority not to be doubted, in which blind persons were enabled to thread needles by the aid of their tongues.† But it is the papillæ at the ends of the fingers which constitute for ordinary purposes, the organ of feeling; and it is to this function of those members, combined with their number,‡ length, and flexibility, that man is in great degree indebted for his superiority over animals, so far exceeding him in size and strength. He does not ride the horse, however, as Helvetius thought, because he has fingers and toes, while the extremities of that animal terminate in hoofs—that result being due to mental power, not physical organization. The inhabitants of

* This feat, however, requires, I suspect, many efforts before it can be accomplished; at any rate, I have attempted it in vain.

† One of these is the celebrated Julia Brace, of Hartford, who is deaf, dumb, and blind; the other was a member of one of the first families in our country.

‡ It is mentioned by Meckel, as a curious fact in comparative anatomy, that there is no creature in existence, which has an extremity terminating in more than five subdivisions. This organization undoubtedly gives us incalculable advantages, and Swift was sadly puzzled to put his favorite huyhuhums upon a par with us in this particular. “They (the huyhuhums) use the hollow part, between the pastern, and the hoof of their feet, as we do our hands. I have seen a white mare of our family thread a needle with that joint”—no easy task, one would think.—*Vide Gulliver's Travels.*

Caffre-land, and the savages of New-Holland, do not differ from us, in anatomical structure, as far as their upper limbs are concerned. Whence then their inferiority? The inequality lies, undoubtedly, in the intellectual capacities of these several races, and not in their fingers. That the hand is admirably adapted to the purposes for which it is designed, cannot be disputed; but that it furnishes us with *all* the knowledge, which those philosophers, termed Materialists, ascribe to it, I can, by no means, admit. And this point I propose to examine at large. First, on account of its intrinsic importance, and secondly, because we derive a large portion of our medical literature from France, and much of it, I allude particularly to the school, first of Cabanis, and then of Broussais,* is deeply tinctured with Materialism. Nearly allied to Atheism, for I imagine the disciples of Priestly† are but few, it requires to be more thoroughly exposed, because being less shocking to our feelings, its diffusion

* Nothing, in my opinion, proves so conclusively the deplorable want of sound learning in the medical students, generally speaking, of our country, as the spread, among the profession, of the notions of Mons. Broussais. I am confident that if one thousand lads, of good understanding, were taken, and carried regularly through the higher branches of philosophy, not half a dozen would be disturbed by his metaphysics, and not even one would pause ere he rejected his medical doctrines, so palpably are they at variance with facts, for which we have all the testimony our senses can afford. For strange as it may seem to some, our very senses are feeble guards against the delusions produced by hypotheses.

† Every Atheist is necessarily, as we shall see, a Materialist, although the converse of the proposition is not true. Dr. Priestly was the latter, without being the former.

has been more extensive, and the consequent mischief greater. But to perfect my discourse, both errors must be embraced—I hope refuted.

In the attempt, however, to expose, and destroy these unfortunate opinions, I shall have to employ an *arm* against which my opponents will protest most loudly. “None of your metaphysics* for us,” they will exclaim, “we are content with common sense.” They may be so, but then they must be likewise content with common ignorance. For common sense can no more develop the workings of the human mind, than common arithmetic can calculate the motions of our globe. Thus suppose a person were to go to an astronomer and say, “Sir, I understand you assert that the major axis of the earth’s orbit is invariable in its length. Now, I do not believe one word of that statement.” “No!” the man of science would reply, “then I will prove it to you.” If to this it were rejoined, “Do so, but recollect you are not to employ, for that purpose, the differential, or any similar cal-

* This opprobrious epithet is applied, by people in general, be the subject under discussion what it may, to three classes of arguments—Those which are refined, those which are comprehensive, and, chiefly, those for which a respondent can find no other reply.

I was once in company with an eminent Judge, who was stating, rather too broadly, an opinion of the Law of War. While he was speaking, I discovered, that I could propose a question, which would bring into direct collision, the sentiments he was now expressing, and his settled prejudices, which were very strong. The query was propounded in a piano tone, when he turned upon me, with the utmost vehemence, exclaiming, “Sir, that is a metaphysical question, and I won’t answer it.”

culus, since to nothing of the kind will I listen. As far as the Arabic numerals will go, I am at your service, but beyond them, I know nothing, will hear nothing, and admit nothing." What, I say, would be thought of the wisdom of such a procedure? Yet, why the only guide to knowledge is to be accepted in one case, and rejected in another, I never have been able to understand. For *all* refined reasonings, if correct, are to common sense, what the calculations of astronomers are to the four rules of arithmetic—always in unison, so far as they go—the former being simply more comprehensive.*

For these reasons, therefore, and others, which are tolerably cogent, will appear in the sequel, I must insist upon using the only mode of reasoning, which, in such discussions, will conduct us to the truth. And to this

* In their adherence to common sense, and hatred of metaphysical reasoning, the Materialists are joined by a large class of persons of very opposite sentiments, and it is amusing enough to observe, how the common sense of one of the parties, conflicts with the common sense of the other. The one it teaches they have a mind, the other it informs there is no such existence. The former it instructs in all they wish to know, or believe to be *knowable*, touching the operations of that mind, while the latter are given to understand that there are no operations of the kind. It follows, of course, they both agree, that to investigate mental phenomena, is an idle waste of time and thought. And it follows further, that when the common sense of the one set, comes into collision with the common sense of the other, neither being furnished with facts, or arguments, the battle has to be waged by an interchange of round assertions, and hard words. After a few broadsides of this cheap and harmless ammunition, the combatants separate, each convinced that his own common sense is very wise, and that of his opponent very foolish.

there is the less objection, because, where the Materialists are concerned, and my remarks are affirmative, no lengthened series of syllogisms will be required. While thus occupied, and with this class of my opponents, I shall have little to do, other than to lay before you, in a form easily intelligible, *all* the facts of the case. The logic to be employed, will be chiefly expended in the examination—I hope it will be found—the demolition, of their solitary argument. I say their solitary argument, because their views, so far as I can understand them, may be summed up, concisely, but with perfect fairness, as follows: “We feel matter, therefore we know it exists. Produce now, that is, make manifest to our senses, what you call mind, or admit there is no distinct existence to which that name can be applied. But such evidence you have not, and must consequently acknowledge, that matter, under one modification, is cognizant of matter in another state, or more specifically, that matter, in the shape of a man, recognises matter, in the form of a stone.”

This reasoning has been put forth as unanswerable, because the *act* which it requires is confessedly impracticable. Yet I doubt, whether in the whole range of controversy, another specimen of ratiocination can be found, equally vaunted, and embracing so many, and such glaring faults in so narrow a compass. Of this ample evidence will be, hereafter furnished, although for the present, two exposures shall suffice. In the first place, the argument involves the obvious fallacy, that the senses afford, not merely the best, but the *only* evidence of truth—the seeming stability of the earth, and the apparent

motion of the heavenly bodies to the contrary notwithstanding.

The second flaw, is of a yet more formidable character. Because the averment "*we feel matter*," clearly distinguishes the agent from the subject, and the pronoun designating that agent, is exactly equivalent to the expression—our minds. Replace then a more general term by a stricter phrase, and observe the result. Our minds "*feel matter*,"—and have consequently, an "*existence distinct*" from what they feel? Quite the contrary. Such existence is ascribed to the material which the mind perceives, but mind is held to be derived from that material, since it cannot be presented, in a concrete form, to a function of itself!—The eye, which sees every thing—a *property* of what itself discerns—because to itself invisible. And this to be called common sense!!

So easy, then, gentlemen, and so certain, do I conceive the refutation of the boasted logic of the Materialists, I would here rest my cause, had not the sophism now partially resolved* proved the foundation of so huge, and dangerous a superstructure, that an

* I cannot resist the temptation, to introduce the most beautiful simile, and happy illustration, which our language, perhaps, affords. It is quoted by Archbishop Whately, from an anonymous pamphlet. "A fallacy consists of an ingenious mixture of truth, and falsehood, so entangled—so intimately blended—that the falsehood is, in the chemical phrase, *held in solution*. One drop of sound logic is that test which immediately disunites them—makes the foreign substance visible, and precipitates it to the bottom." Would that moral incongruities were as diligently, and successfully studied, as chemical combinations.

analysis of the whole subject is required. In this accordingly I propose to engage. And I shall do so in the perfect confidence, that the premises of our adversaries, as understood, and employed by them, will be found as false, in point of fact, as any inference they can furnish, touching the topic under discussion, is necessarily illegitimate, and unfounded.

For the more ready attainment of our object, it may be well to state, in plain terms, the problem really to be solved. It is as follows: Does more than the single, solitary element, matter, enter into the composition of man?

Thus expressed, the affirmative can be proved, on the implied admission, that *one* ingredient at least, is required for the formation of a human being. The nature of that one, if there be no other, will be incidentally demonstrated, as we proceed, but the truth especially to be established is, that "more than the single, solitary element, matter, does enter into the composition of man."

To sustain this proposition, in the mode proposed, the declaration, "we feel matter," and the inference therefrom—"therefore, we know it exists," have to be disposed of. The one, and the other—the premise, and the deduction—are both denied, and I undertake to prove that no Materialist ever did *feel* matter, or ever can *know* that it exists.

Having thus thrown down the gauntlet, in the broadest, and strongest terms, nothing remains but to arrange the conditions of the battle, that is, to state, by way of preface, the requisite definitions. Now the contest has to turn upon the words "feel" and "know," of these, there-

fore, a right understanding must, primarily, be had. We shall begin with the first.

The expression to "feel" is ordinarily applied to sensations which have not a great deal in common. Thus we say, we "feel" happy, cold, &c. In the controversy in which we are engaged, it refers to ideas derived strictly from the Sense of Touch.

In the foregoing part of the Lecture, when describing this sense, I mentioned that it is, in some measure, diffused over the whole body. Hence, as may be well imagined, impressions, from this source, career through the mind in a continuous current. Myriads of them, of course, are never attended to, while those, which become objects of consciousness, immediately undergo a species of transformation. The primary sensation is converted into a secondary perception, and this being done, the mind instantly, and further proceeds to draw an inference. But these two last mental operations must not be confounded with the first. For that is the cause, while they are its effects, and one is a mere state of the mind, while the others refer to something external to the percipient power, and of a character widely different. When, therefore, the Materialists say, they "feel" matter, they couple a fact, the being conscious* of a sensa-

* Consciousness, it must be recollected, is always restricted, in discussions like this, to our being aware of the present existence of a sensation, and excludes every subsequent affection of the mind. Thus defined, it obviously cannot be otherwise than true, while perceptions, and inferences, which are frequently confounded with it, may be, and as we shall hereafter see, are, occasionally, false.

tion, which is indisputably true, with ideas, which, whether true or false, must be investigated, and proved, before they can be admitted. An uninformed hearer, however, duped by the language employed, never dreams, that any discrimination can be required, in so plain a case, and without more ado, acknowledges the whole account, to be not only true, but self-evident.

Thus through the nearly universal carelessness, and ignorance of mankind, in relation to such subjects, the Materialists dupe themselves, deceive a few, and puzzle many, by the mere phraseology in which their argument is couched. Of this advantage, an accurate detail of the facts will deprive them, and at the same time relieve you from a continued contemplation of abstractions. These facts, the proof of which will occur to your own minds, as they are announced, nevertheless possess so much importance, that every one will have to be commented upon, as it is stated. We must take them in their order.

When I hold these spectacles in my hand, I experience a sensation—the sensation resistance. If I exclude my other senses, and their introduction, while it embarrassed the argument, would not at all aid my opponents, the Sense of Touch will obviously impart no further information, bearing upon our inquiry. It is consequently the sensation resistance, only of which I am conscious, and beyond this every proposition must be clearly stated, and distinctly proved. But to accomplish these objects, without the aid of metaphysical science, is obviously impossible. What then will the Materialists do? Will they consent to invoke the assistance of what they profess to scorn, and certainly have good reason to

detest—the philosophy of mind ; or will they content themselves with the solitary result as yet elicited ? If so, it is well. But then their reasoning must be made to correspond with that result. In other words, resistance—a sensation of which they are conscious, must be substituted for matter, of which, for the present, at least, they are assuredly ignorant. Reform then the argument, in phraseology, and in fact, and it will stand as follows : The idea, resistance, is excited in the mind, “therefore we know” such a sensation “exists. Produce now, that is, make evident to our senses, what you call mind, or admit there is no distinct existence to which that name can be applied. But such evidence you have not, and must consequently acknowledge that” resistance “under one modification, is cognizant of” resistance “in a different state ;” or more specifically, and in conformity with literal truth, sensation “in the shape of a man, recognises” sensation “in the form of a stone”—a *sequitur* sufficiently surprising, certainly, whatever may be thought of its soundness. It has, however, the merit of simplicity, pushed to unity, and it is, without doubt, that circumstance which endears it to the Materialists.* But our philosophy requires a broader foundation of facts, and for these we shall accordingly proceed to seek.

* Excessive simplification is alike fatal in metaphysics, and medicine. In both, any very comprehensive hypothesis may, from the very circumstance of its extreme generalization, be at once pronounced false.

The brilliant discoveries in astronomy have, I am persuaded, had an ill effect on other branches of knowledge. The grandest of the physical sciences stands, doubtless, alone in the singleness

In carrying on our proposed researches, a source of error and confusion will have to be revealed and removed, which is rather recondite, and to which slight allusion has hitherto been made. It is, nevertheless, the spring-head of all the difficulties attending the inquiry in which we are engaged, and furnishes to the doctrine of the Materialists, whatsoever of plausibility it possesses. To deprive their unfortunate creed of this deceptive coloring, distinctions must be traced which are by no means patent, and which never occur to the bulk of mankind. But once familiarized to the mind, the toils in which the Materialists are themselves entangled, and which they spread to catch others, are as cobwebs to the lion—he doth not feel, he doth not know them.

What then are the discriminations, on which I lay so much stress? They consist, in separating a cause from its effects; in distinguishing, between a state of the mind, and a quality, as we suppose, of matter; and lastly in the remembrance, that a premise is not a conclusion.*

of its principle. In the others, an augmentation in the number of their elements may not, as it has done in chemistry, keep pace with their improvement; but perfect them as we may, the amount of their ultimate facts can never be small.

* Did these phenomena form a part of physical science, no observer would be so gross as to confound them. But appertaining to the diviner part, merely, of our nature, they are not thought worthy of attention, except by here and there an inquirer, at whose simplicity, in attending to such trifles, his fellow mortals are wont to smile. The result is, that in what relates to the mind, not only can no theory, as it is called, be so monstrous as to fail in finding supporters; but no random assertion can be too glaringly absurd to have its believers.

These are all the distinctions which it is absolutely necessary to perceive, and to recollect ; but for the full understanding of the subject, several collateral particulars must be included. The whole will now be laid before you ; and for that purpose recourse must once more be had to the spectacles.

When I hold these in my hand, I am conscious, as already stated, of the "sensation resistance." But no sooner is this experienced than our mental machinery, being set into operation, and moving according to its appointed laws, instantly excites in our minds, other and far different notions. These of course stand to the first in the relation of effects to a cause. Of these effects the primary one is the perception of the *quality* resistance. Now although, as I have said, the *sensation* resistance, is the immediate cause of our becoming acquainted with the *quality* resistance, and although what is, if possible, a wider difference, one is obviously a state of mind, while the other appertains, as we shall hereafter see, to matter, yet is the same appellation* applied to both ; they are virtually blended into one, nor is any distinction ever taken between them, by superficial inquirers.

All parties then being equally unobservant of what passes in their minds, when a Materialist says he feels matter, his auditor acquiesces, both understanding the

* Precisely the same inaccuracy of language occurs with regard to the other senses, except that of hearing. The sweetness of sugar, the greenness of grass, the smell of the rose, are all instances in which the same words are used indifferently for causes, or effects, for sensations in the mind, or for qualities in things. But no one confounds the tune with the fiddle.

word, first in one sense, and then the other. And not satisfied with this original blunder, they immediately fall into several others. For, secondly, they confound the *quality* resistance with the substance to which it belongs. Thirdly, they disregard that quality altogether; and thus matter is supposed to be an object of direct perception. Fourthly, this perception is imagined to be the result of actual contact between the body felt, and the percipient power.

Here then are four mistakes in three words, and to these must be added, what was before mentioned, the transferring the certainty, which cannot but attend a sensation of which we are conscious, to the supposed material cause of that sensation, although the reality of such cause, so far from having been proved, has hitherto been scarcely adverted to.

The result of all this inaccuracy of observation, confusion of thought, and ambiguity of language, is, that the ill-taught asserter of the independent existence of mind, having incautiously conceded the postulate, that matter is felt, and being thereupon required, unreasonably enough, to produce evidence not only equal in degree, but similar in kind, finds himself puzzled, if not conquered. Whereas had he scrutinized with care and intelligence, his own mental operations; had he familiarized himself with the distinctions on which I lay so much stress, instead of yielding the required concession, he would at once say, "No! how can you possibly expect me to assent to your assertion that you feel matter? In the first place I have already denied, and do again express my complete disbelief of the fact. But secondly, you ask me to grant the

very point, upon which the whole force of your argument depends. Even were I to make the admission, it would avail you nothing. Nevertheless, I shall do nothing of the kind. Prove your proposition. In appearance and manner you are confident enough. Why then beg the question in the form of a loose, ambiguous, nay, garbled, postulate? I add the last epithet, because, as I shall hereafter show, when, in your phraseology, you feel matter, you experience at the same time other impressions, with at least equal certainty, and these you leave out of view. But to such an omission I cannot consent; you must include *all* your feelings connected with the point at issue, or you must make no appeal to them. If you attempt the former, you are guilty of *felo de se*, as will, in due season, be rendered manifest. If you adopt the latter, there is an end of the argument. Would you be advised by an opponent? Change your tactics. For in your present mode of conducting the discussion, instead of proving what you do wish, you unwittingly concede the reverse. Thus you say you feel matter. The sensation we admit. But sensation implies consciousness, and consciousness, by definition, is a particular state of the mind. Here then we have *mind*, by your own acknowledgment. Yet from this very acknowledgment, and through the aid of another of the mental powers, you are endeavoring to sustain your doctrine. In other words, you are engaged in the hopeless task of attempting, through the agency of mind, to disprove the existence of mind!

“But you will perhaps object to our definition. Do so, if you think proper, yet take heed what you are about.

For whether there be such a thing as matter, or not, the fact has not hitherto been made to appear. Yet until it does, you are exposed to a maxim, as true in philosophy as it is in law, *de non apparentibus, et non existentibus—eadem est ratio*. If therefore you discard our mind, before you establish your matter, you will attain the sublime conclusion imputed to the lordly poet, that

——— ‘nought is every thing, and every thing is nought.’

Such a reply to the assumption of the Materialists, they “feel matter,” defies, I think, all rejoinder. You are not to suppose, however, that because I repudiate their logic, I therefore deny their conclusion, and maintain the non-existence of matter. I admit, my *mind infers* there is such a substance, and as you are at length prepared to understand the premises from which this conclusion really flows, and the degree of certainty which in truth attaches to it, I will now proceed to state the case at large. That is to say, I will now explain how the idea of matter obtains entrance into our minds, and how far we can be said to *know* that it exists.

For the accomplishment of these objects, I must in the first place define, as I formerly promised to do, the word *know*. In its philosophical sense, and as used by the Materialists, it means a certainty, so perfect, as to preclude all possibility of error. According to this definition, I apprehend, to *know* that matter exists, is not within the scope of our faculties. There is, in my judgment, sufficient evidence to warrant a *belief* of the fact; and with such belief, Materialists as well as others will have to content themselves.

To prove this, I shall have to recapitulate some of the facts which have already been established.

It has been shown that, under certain circumstances, we experience the sensation resistance. It has been further shown, the instant this occurs, a conviction arises in the mind, that there exists also a certain quality to which the same appellation is applied. Now if our mental operations were to cease at this point, it is quite clear we should have no conception of the *substance* matter. But they do not cease, and will, with, or without our volition, carry us onward, and force upon us the conclusion, that resistance being a quality, cannot subsist *per se*, and must consequently depend upon some thing—or substratum, as it has been termed. That substratum is of course what we have been so long in search of, namely, matter. This interesting discovery then, you perceive, so far from being the result of direct and immediate perception, is brought about by a very curious, and complex process of the mind. By a process so rapid indeed as to escape ordinary notice, but nevertheless capable of being entirely unravelled, and perfectly comprehended. What is singular, the sequence of actions which leads to the idea of matter, is originally confined to the Sense of Touch. Thus nothing of the kind takes place, independently of the laws of association, with regard to tasting, smelling, seeing, as I am persuaded, and above all, hearing. And, accordingly an illustration from the last mentioned faculty, will facilitate your understanding what I have been endeavoring to unfold.

When we hear a noise in the street of a particular kind, we say, according to our experience, we hear a

coach, or a fire engine. But if reminded of the intermediate agent "noise," the loosest observers are at once aware, that they do not hear the coach, or engine, in the same sense, in which they would say they felt those machines, if their hands were upon them. Here the difference between perceptions, and inferences is palpable; for all will admit they hear a sound, and thence suppose so and so. Now only apply the same discrimination to ideas derived from the Sense of Touch; keep in view the intermediate agent *resistance*, in the one case, as you do noise in the other, and the mists in which the Materialists envelop their doctrine, will be sufficiently dispersed for the truth to appear. That it should beam fully upon you, a further analysis is required.

I have already stated the train of thought which gives rise to the idea of matter. But with that idea, when it refers to an external body, other notions are inseparably associated. These are, no doubt, frequently disregarded, but they are nevertheless always present, and may be recognised by any one who chooses so to do.

Thus, when I press my hand upon this table, I not only become cognizant of its existence, but I am also informed, that it is both external, and alien to the power which perceives it. I am notified further, that the said table exists now and here; in other words, that it endures through a certain portion of time, and fills a certain portion of space. Of the two last ideas, I shall have something to say hereafter; our immediate business is with the two first.

Our notion of outness is not necessarily accompanied by that of matter. An impression of externality can be ex-

cited by mere pain. Thus, when we experience a simple twinge of the tooth-ache, we suffer, and are aware that the cause of our suffering is *without* the mind, but the idea of matter does not occur to us. Nay, supposing a person born blind,* with the same imperfection in the Sense of Touch, which, in the auditory nerve, so often produces deafness, the individual might exercise, in their full vigor and intensity, every important mental function—consciousness, memory, &c., which any of us enjoy. Yet a being so constituted, could form no conception of what we call matter. Such an idea is therefore by no means necessary, and when entertained at all, is a mere incident, amid a series of unavoidable impressions.

The second of those impressions, foreignness, is very faint, unless it be conjoined with that of matter. Then it becomes sufficiently vivid; in so much, that whenever the notion of matter, in its concrete form, enters the imagination, the conviction is just as strong, that such matter is unlike the mental power which perceives it, as it is, that there is any matter at all. In other words, when I press this table, I am, to the full, as confident that it is at some distance from my mind, and different from it, as

* I include loss of sight, to prevent cavil, although, as stated below, so far as I can judge, the notion of matter, due exclusively to the Sense of Touch, is afterwards associated with ideas derived from the eye. My supposed unfortunate would, of course, be a complete Berkleyan, and undisturbed by the re-action of his own faculties, could not do otherwise than reason logically—Mind, being conscious of impressions—mind is. In this respect he would consequently have the advantage of many, more favored in their physical construction.

I am convinced that there is a table. Nor can I, by any possibility, insulate the principal idea from its accessories. If then the first be taken, the others must accompany it, and matter being held to exist, because it is felt, mind must be held to exist also, and with more certainty—the evidence in its favor being, as three prior perceptions* to one succeeding inference.

You are now satisfied, I hope, of the truth of what I formerly stated, that the postulate of the Materialists—they feel matter, is a loose, ambiguous, and above all, a garbled one; and that if the *whole* of the facts be taken into the account, and arranged in their proper order, two things† never to be omitted in philosophical investigation,

* The third perception is the quality resistance; and there may, in truth, be added our notions of time and space.

† The two requisites, mentioned in the text, are obviously indispensable to correct reasoning, and a want of attention to the one or the other, is the most fruitful source of error. Of a mistake in the latter particular, of the most momentous importance, Mr. Hume affords a memorable example. That ingenious, and acute writer proved every man to be selfish, by simply transposing, and thus transforming, the subsequent reflection of having been the happy agent to perform, a benevolent action, into the antecedent inducement, and motive to accomplish the good deed. In philosophical language, he substituted the final, for the efficient cause.

But the first blunder is by far the most common one. Thus Miss Martineau, by neglecting elements, in the form of feelings, that she should have included, has arrived at conclusions in relation to the matrimonial compact, which, if acted upon, would uproot the very foundations of society.

After the same manner some Southern gentlemen of note and talent, by *omitting more than half the facts*, have contrived to make out, that slavery is beneficial to a *new* country, which is found to

their doctrine cannot stand. These gentlemen are thus placed in a most awkward predicament. For if they will not advance beyond the primary sensation, they are discomfited, since sensation is not matter. If they take the second step, so as to perceive the quality resistance, and will then proceed no further, they are defeated, because quality is not substance. And lastly, they are utterly vanquished if they attempt the final and decisive act—the recognition of external things. Because antecedently to such recognition, and afterwards indissolubly united with it, are the perceptions of outness and foreignness, time and space—perceptions more demonstrative of mind, than is resistance of matter.

The impugnors of mind have then, I fear, placed themselves between the horns of a dilemma, by the one or the other of which they are in danger of being gored. For they cannot prove that matter exists, without at the same time proving, with more certainty, that mind exists also. Nor will the rules of logic permit them to *assume* the existence of matter, and from that assumption deduce the non-existence of mind, since this were to argue, because the one is—therefore the other is not.

I repeat then, that our opponents must submit to be impaled. For they are obliged either to accept of our

improve more rapidly from compulsory, than from free labor. Of course, in estimating the progress, or condition of a recently planted people, the only items to be computed are, the number of trees which have been felled, and yards of ditch which have been dug—the state of society, as regards its improvement, religious, moral, and intellectual, its habits of feeling, and thinking, and its modes of acting, being counted for nothing!

mind, with their matter, or relinquishing mind, matter goes along with it, and, so far as it is practicable for them to ascertain, themselves, the earth, and the universe, keep it company !

Having thus shown you the origin of our belief in the existence of matter, I must next explain the manner in which we refer bodies to a moment of time, and a point in space.

With regard to the first of these impressions, there is no great difficulty—the idea of duration being necessarily associated with every sensation, either during its continuance, or *as having been*. But the notion of position is quite a different thing. For you are not to suppose it is simply because my fingers press on this table, that, therefore, and for that reason only, I suppose it occupies this particular spot. Not at all—had there not been a special law made and provided for such occasions, I should indeed infer there is a table, but its precise location could never have occurred to me. That law may be thus stated: Impressions made upon any point of a sentient nerve, are ascribed to a particular part, and usually to the distant, sentient extremity of such nerve ; and this, although the impressing cause, act, as we shall hereafter see, upon the middle of such nerve, or even its internal extremity.* Nay, it is by no means uncommon, through what is called sympathetic action, or more definitely, misplaced sensation, for pain to be felt in one

* In extirpating the eye, the optic nerve is cut, between the retina and the brain, yet the intense flash of light, perceived at the instant of the division, is referred to the former.

part of the system, while the offending matter is lodged in a different, perhaps a remote region of the body, where it gives no intimation whatever of its existence.

But whether a true reference take place or not, it is evident, upon the slightest reflection, that *an* act of reference is indispensable. Because the mind never can be conscious of any thing external to itself, and but for the provision under discussion, resistance would be all it does or could know—the information imparted by the eye, as in a person born blind, not bearing upon the question. How then, I say, comes my mind, although at the distance of several feet, to suppose that the cause of the resistance which it experiences—that is, the table—occupies this particular place? The notion of locality is a perfectly definite one, and its reception by the mind must be accounted for. That is done by the law above announced, and as far as I know, by that law only.*

Having now explained to you the mode in which the mind acquires the idea of matter, and the several associations inseparable from that idea, I may remark, that although our notions of external things are primarily derived from the Sense of Touch exclusively, yet those notions when once obtained, are confirmed by the combined action of the other senses, particularly the eye. Hence we say as familiarly that we see a thing, as that

* Is our idea of *space* derived from outness, or from locality, or from both? I am inclined to think it an inference from the former impression, that having priority in point of time. And the conviction of something being without the mind, compels us to conclude it is somewhere—in space.

we feel it. And secondly, our convictions respecting external bodies, are further strengthened by another of the laws regulating our mental operations, and which may be thus expressed. Whenever an impression* derived from our organs of sense, acts upon the mind with sufficient force, the conviction, however unfounded in fact, is complete as to the *reality* of the cause of that impression. Accordingly a belief which in our cooler moments we know to be absurd, may, for a time at least, and in despite of our efforts, overpower us. How many persons

* I am disposed to think that every impression made upon our senses, in our actual situation, induces a belief more or less vivid, and more or less momentary, or continued, in the reality of the impressing cause. On the other hand, a pre-conceived notion predisposes our organs to convey impressions corresponding with those notions. Hence a firm conviction that spectres are sometimes visible, inclines the eye, under appropriate circumstances, to see what it otherwise could not discern.

Where the mind is sound, reason readily corrects the false intelligence which may be received from without, except the impression be exceedingly intense, or both novel and strong. In the former case, it has more than once proved indelible, and produced mania. As in the occurrence which caused Garrick to act the Grandfather, who playing with his grand-child out of an upper window, the infant sprang from his arms, and was dashed to pieces. For ever after, the miserable old man conceived the horrid scene to be, at every moment, passing before his eyes.

Where we wish to control an impression, it should be repeated, at proper intervals, until, its force being weakened, the judgment can acquire the mastership. Thus when a sailor-boy first goes aloft, that his vision may not delude him with the idea of danger when he casts his eyes downwards, he is directed to look *up*, until habit can give him confidence in his security.

are there for instance, who sceptical enough as to supernatural appearances in the broad glare of day, cannot persuade themselves that all they may behold, or hear, is earthly, if alone, near a sequestered burying ground, in a gloomy twilight, illuminated by an occasional flash of lightning? Thus situated, reason might be summoned, but vainly summoned, to resist the united force of impressions from without, and associations from within. In the ordinary affairs of life, however, not one in a million ever for a moment suspects a want of truth, in the intelligence communicated by his senses. With that intelligence, that is, with the modifications of matter, or with reminiscences of those modifications, we are occupied nearly the entire whole of our waking hours. Now the tendency of all these combined causes, being to force upon us the conviction, that there is really and truly an external world, their united power, in the usual state of our minds, is absolutely irresistible. A keen metaphysician, indeed, plunging into the depths of abstraction, rapt in the ardor of inquiry, and revelling in its profundity, may, occasionally, like Berkely, and Hume, and eke myself, if my humble name may be conjoined with theirs, believe for the moment, that *all* is mind. But for my own part, whenever my conceptions have been thus sublimated, a few strides* on *terrâ firmâ* have sufficed to dispel the illusion, and restore the sobriety of truth, in the humbling conviction, that soar as we may, for the instant, we are nevertheless “of the Earth—Earthy.”

* Mr. Hume’s corrective is said to have been a game at whist, and a glass of port.

Is it possible then, you may be inclined to ask, that a belief so universal, and so strong, as to be doubted temporarily only, and by the minutest fraction of mankind, is it possible, that after all, such a belief may be founded in error? Yes, I fear so. First, because the thoroughness of our convictions, as to the truth of some opinion, is of little avail in proving the correctness of that opinion. And secondly, although in questions of moral propriety, the determination of the good, and the wise, is decisive, yet on many occasions, particularly as regards physical truth, what the mass may think is of little, on others of no importance at all. Nay, where passion and prejudice can operate, the united voice of the multitude becomes absolutely a negative quantity. Of the former, a belief in the influence of the moon is a sufficient evidence; and for the latter, I need only cite the well-known exclamation, and “they,” that is, “the chief priest, the rulers, and the *people*, cried, saying, crucify him, crucify him.”*

But independently of these general considerations, errors sometimes occur in the intelligence imparted by all our external senses. The deceptiveness of four of them is, indeed, universally admitted; and though, with the multitude, “seeing is believing, but feeling is knowing,” yet it is demonstrable that the Sense of Touch, if less apt than the others to impose upon us, is nevertheless liable to do so, from, what may be termed, the *indirect-*

* Luke xxiii. 21. This quotation is said to have put an end, for a time, in one of the State Legislatures, to the frequent, false, and profane exclamation, *Vox Populi—Vox Dei*.

ness of our perceptions. What that means I will now explain.

You may recollect that when I enumerated the errors involved in the expression "we feel matter," I mentioned as one of them, the supposed contact of external bodies with the perceptive faculty. Now this faculty is manifestly a function of the mind, which being situated, unquestionably *within* the brain, is always more or less remote from the impinging body. There consequently never can be even an approach to contact between the power which *feels*, and the thing which is *felt*.

But further, as regards our very physical construction, a notable distance always intervenes between the tactile organ, and the material substance which may affect it. For first, unless when temporarily abraded, the insensible scarf-skin is uniformly interposed. And secondly, minute anatomical researches have shown a perfect analogy, as respects three of our senses, and which doubtless extends to the whole. At any rate, in the eye, the ear, and the finger, a regularly constituted apparatus interposes between objects which are to excite impressions, and the nervous filaments destined to receive those impressions, and convey them to the brain. Bodies, of course, can never come into contact with even the nerve of touch.

Lastly, natural philosophers,* and chemists say that

* By observing the varying rings of light, formed when a polished sphere of glass was pressed upon a smooth plate of the same metal, Sir Isaac Newton long ago demonstrated, that apparent was very far from being actual contact. His materials would bear a weight of only 20,000lbs. to the square inch, and with that amount of pressure, the intervening space was, by calculation, equal to

the particles themselves of bodies can never come absolutely together—a *fortiori*, gross substances do not. Strange, therefore, as it may appear, it is altogether certain, that not even the cuticle of my fingers touches the table on which my hand rests.* And be not amazed at

the 70,000th part of an inch—if my memory has not deceived me, for the work in which I read the account is not to be found in the city.

But Dr. Brewster has shown, that when ordinary light will no longer detect space between two surfaces, the fact of a separation may be proved by polarized light. And it is, I understand, further the opinion of the profoundest inquirers into physical science, that in the most compact bodies, the magnitude of the spaces between the particles, exceeds, in an immense ratio, the bulk of the particles themselves. How this may be is of no importance to the metaphysician—he contenting himself with gross substances, and leaving atoms to the ingenuity of mechanical and chemical philosophers.

* The fact here averred is so amply proved, as far at least as we are concerned with it, by the experiments mentioned in the foregoing note, that no further corroboration can be required. The following argument may nevertheless amuse the reader.

It is evident that if the particles of any substance be already in contact, they cannot be brought nearer to each other. If therefore they can at any time be more closely approximated, it is clear they were not previously in contact. But however low the temperature of the densest bodies, if it be further reduced, they will contract in every direction. It follows, their particles could not previously have been, nor can at any time be, in contact in any one direction.

Again. The rays of light cannot pass through the particles of matter. In permeating bodies, they must consequently take their course between the particles of those bodies. But these rays are transmitted through the hardest masses in every possible direction,

such a statement. For it is far less startling than the astounding fact, proved as I think, by those ingenious gentlemen the astronomers, that while we are all here in a state of seeming quietude, and perfect repose, we are actually whirling through space, heels over head, ten times as fast as ever yet a cannon-ball "winged its way!"

It is then beyond all doubt that we do not "feel matter," in the manner assumed by the Materialists; there being as certainly, in the case of the tactile as of the visual and auditory faculties, a medium interposed between the organ and external bodies. The question then arises, what is that medium—what, in point of fact, do we feel? I answer, we feel that power of repulsion which, with a force absolutely invincible by human means, insulates every particle of matter, from every other, and separates, more widely, of course, bodies from bodies. Of the nature of this force I am not aware that we know any thing, further than that it *seems* to be increased by heat, and decreased by cold. Be the essential character of it, however, what it may, its being absolutely insuperable by us constitutes the only attending feature with which we are concerned.

But if the table and my fingers were in contact, it must be recollected that our organs of sense, are neither the mind, nor the seat of the mind, that, as was before

and with equal facility. It follows there can be no contact in those masses, by points or otherwise, to interrupt their progress. As, consequently, there is no contact between the particles of bodies, *a fortiori* there is none between bodies themselves, and none, of course, between the cuticle of my fingers, and the table.

stated, being at some distance, and doubtless somewhere within the cranium. At that point, wherever it is, all impressions from without must be finally received.—When, therefore, a sentient nerve is excited, by an appropriate stimulus, the action induced, whatever its nature, has to be transmitted, in some mode or other, through such nerve to the sensorium. With respect to the olfactory, optic, auditory, and gustatory nerves, the route to be travelled is comparatively short, and leads directly to the brain. But the case is very different with the Sense of Touch, as situated in the fingers and toes. From them impressions have to pass through some feet of nervous chord, some inches of the spinal marrow, and a portion, more or less considerable, of the brain itself. Here then is ample scope for irregular action, and consequent deception. For the immediate physical cause of our perceiving external things, must be a certain condition of that portion of the cerebral substance which is last affected, antecedently to the act of perception. It is, therefore, absolutely certain, that if such portion of the brain can, from any cause, intermediate between itself, and the remote, sentient extremity of the nerve, or from any other agency whatsoever, be thrown into the same condition, which ordinarily induces the perception of exterior objects, then the mind, being on both occasions acted upon, in precisely the same manner, must come to the same conclusion. But in one instance we have, or suppose we have, an external tangible cause for such conclusion. Whereas in the other, there may, by hypothesis, be nothing of the kind. All we have to do then is to convert our hypothesis into fact.

Before attempting this, however, I have to admit, that not knowing the exact state of the deeper seated parts of the nervous system, which is the immediate antecedent of sensation and perception, I cannot demonstrate that that state is always the same, whenever those mental results occur. But I can demonstrate what answers my purpose equally well—that the mind does, through internal physical agency—that is, internal as regards the distant sentient extremities of our nerves, and independently of impressions upon those extremities, go through precisely the same operations, and arrive at the same results* with those usually ascribed to the action of material objects. It follows, consequently,

* We are so accustomed to suppose there is a necessary connection between our perceiving bodies, and their existence, that it sounds very oddly when we are first told we may see, hear, nay feel, as we may imagine, when in truth, there is nothing to be seen, heard, or felt. The mystery is at once cleared up by what is stated in the text, in relation to the irregular action of the nervous system; and to these must be added the disordered movements of the mind itself. The whole doctrine of visions, spectres, ghosts, &c. is thus at once explained, without impeaching the veracity of those who aver they have seen unearthly things. Take the following as an example.

A legal gentleman of eminence in London was ill with a pleuritic affection. When convalescent he saw one evening in his easy chair, the figure of a female to whom he had been fondly attached, and who had been dead for some years. Her countenance was directed towards him, and smiling. The patient being convinced it was an illusion, tried various experiments, and after a time it disappeared. As it happened, he suffered a relapse, and the figure again returned, but now looked frowningly.

Had the mind of this individual been feeble, his temperament

that an idea which may be true in one instance, is certainly false in the other. But where, in philosophical language, we have an event sometimes preceded by a particular antecedent, and sometimes not so preceded, we are not authorized to predicate, universally, that such antecedent, and consequent, stand towards each other in the relation of cause and effect. And consequently we cannot affirm in any given case, other proof being absent, because we observe the second of these events, that therefore the first has preceded it. Yet our senses are necessarily the sole witnesses upon whose testimony we have to rely, for our belief in an external world. It becomes then a question of fact, whether these witnesses do ever play us false—that is, whether our nervous machinery does fabricate, and impart to the mind, clear and distinct, but unfounded notions? Now that this happens frequently, and that it may be made to happen at any time, is certain. For in the first place, we have occasionally dreams depending upon nervous irritation, which give the most vivid ideas of external things, independently of all external agency. Secondly, we have a large number of maniacs, whose disease consists entirely in erroneous impressions, communicated by their organs of

enthusiastic, or his character one of timidity, the effect of such a vision may be well imagined.

Brutus, as the classical reader will recollect, *heard*, as well as saw, the spectre which appeared to him. And there is one case on record where the nerves of touch were also imposed upon, the person *feeling*, hearing, and seeing an imaginary *blue* dog. An occurrence like this, however, is rare, but the instances of optical deception are innumerable.

sense. In these persons the mind reasons logically, but from false premises, deceived by the channels through which it is obliged to receive its data.*

Thirdly, it is a well known fact, that where a lower limb has been removed, the patient "feels his toes," as he expresses it, for some weeks afterwards. The nerves, heretofore continued to those members, being in a state of irritation, undergo the same changes they formerly did, affect the brain consequently in the same manner, and lead the mind to the same conclusion. Now here it is evident that but for the memory, the eye, and the Sense of Touch, in the other parts of the body, the patient would still believe the amputated toes to be in their wonted situation. *And for this belief he would have all the evidence to be furnished by what is commonly called consciousness.*†

Precisely the same phenomena, physical and meta-

* It may perhaps be objected, that these cases prove nothing, since madmen furnish the example. To this I reply, there is no evidence of which I am aware, to evince that we, who conceive ourselves sane, are right in our notions, other than this—we all concur. There was, therefore, more than wit in the reply of the lunatic, who discoursed so sensibly, that some one was induced to ask him why he had been consigned to an asylum? "He knew not," he said, "except that he and mankind *differed as to certain particulars*, and the majority being against him, they had locked him up."

† Consciousness, as before stated, is restricted, in metaphysical language, to the experiencing of a sensation, excluding every subsequent affection of the mind. And we now see the propriety of the limitation, as otherwise consciousness itself might practice tricks upon us. In that case, upon what could we rely?

physical, are of perpetual occurrence in what are now called cases of spinal irritation. Thus a gentleman of high rank in the law, walking in the street, felt what he imagined to be a chip, or other hard substance in his shoe. He stepped into a store to remove the extraneous body, and thus relieve himself from the pain, which he supposed, it caused him. Upon taking off his shoe and stocking, he was amazed that nothing could be found. And if I may be allowed to quote myself as authority, I can state that having been for many years, as I suppose, the subject of this affection of the spine, I have, probably an hundred times, felt pains about my hands and fingers, and which were sometimes unpleasantly sharp, precisely as if some cutting instrument were dividing the skin. I have sat, feeling the sensation, and seeing there was no external local cause for what I experienced, betaken myself to philosophizing about it.

But we have more striking, and more baneful evidence of sympathetic action between the origin and termination of the nerves. It is now well known that the heart, lungs, stomach, &c. &c. not only cause us to suffer, but to die from disease, commencing in the proximate, and then transferred to the distant extremities of the nervous filaments with which these organs are supplied. Accordingly of the multitude of victims to consumption, not a small proportion are secondary, not primary cases.

But fourthly, we can at any time cause our fingers to fall into error, by crossing the first and second, and placing a pea between them, and the palm of the other hand. Upon the performance of this experiment, a distinct impression of *two* round bodies is received.

Lastly, every mother's son of us is deceived, as far as the Sense of Touch, aided by ALL our other senses, can deceive us, in relation to the motions of the Sun and the Earth.

Now in all the cases which I have enumerated, sensations are experienced, giving rise to false perceptions, and, of course, to false inferences. Hence it follows that the hypothesis, which I undertook to convert into fact, has been so converted. In other words, I have proved our nervous machinery does, occasionally, from causes, sometimes internal—sometimes external, impart to the mind clear, and distinct, but unfounded notions of external things.

The views which have just been taken, gentlemen, appear to me conclusive, yet they do not exhaust the case. For every Theist must admit, that had such been the pleasure of the Creator, our minds might have been so framed, as to be conscious of exactly the same emotions they now experience, independently of external material causes. And whether he have thus willed, it is obvious no human being can ever determine. But Theist or Atheist cannot deny that impressions are felt. The *fact* then of a substratum for those impressions, or more generally for mental phenomena, is one of those truths, *the contrary of which is inconceivable*. Mind, therefore, is certain, while matter is only probable. Materialists, consequently, however much they abhor the word, must be content with *belief*, since to *know* that matter exists has not been vouchsafed to them, or to us.

Having now completed the promised analysis, we are prepared to specify, and sum up results. They are as

follows : the *mind* is conscious of the sensation resistance : the quality, designated by the same expression, resistance, is then perceived by the *mind*, whereupon the *mind* further infers, that such quality appertains to something external, and foreign to itself, which something,* the *mind*, lastly, conceives to exist in time and space,† under the denomination of matter. Now I beg you to observe how manifest, throughout the whole of the foregoing enumeration, is the primary and pervading action of the mind, and how secondary, subordinate, and dependent, is our belief in matter. Will then, the Materialists, in despite of this array, and *sequence* of facts, adhere to their doctrine ? If so, candor requires they should acknowledge, and premise the peculiarities that distinguish their school—a school, which, in a process of ratiocination, authorizes an *ad libitum* omission of elements—that deduces conclusions, which, so far as they have any connection with

* It is precisely this something, placed for ever beyond the reach of our faculties, and not the sensible qualities of bread and wine, which the Romish Church holds to be changed by the act of consecration, in the administration of the Eucharist—a view of the case completely foiling the vulgar argument against Transubstantiation, although advanced by Tillotson, and endorsed by Hume.

† It would be, of course, ridiculous to state all these circumstances on every occasion; and to say I feel this, or that thing is quite sufficient for the ordinary purposes of life. But this brief mode of expression, though admirable for the despatch of business, is not equally favorable to fulness, and accuracy of thought. Horne Tooke's motto, therefore, to the Diversions of Purley, *Dum brevis esse laboro—obscurus fio*, is true to a greater extent than that acute grammarian was, perhaps, aware of.

premises, bear to them an *inverse* relation ; and finally a school where effects are *followed* by causes. In virtue of the first of these new rules of philosophizing, a remote mental result is held to exclude preceding, engendering, and concomitant mental affections. In compliance with the second, the inquirer is led from the perception of *passive* substance, to the denial of a distinct, and *active* percipient power. And in conformity with the last, mind, "Imperial Mind," is held to be that brute matter with which itself had, previously and casually, made us acquainted !

Having thus, by denuding, corrected the errors of my unfortunate opponents, with one further remark, my cause shall be submitted to their, I hope, now enlightened, common-sense. The remark is this : It is alleged, that according to my own admission, there may be but a single basis—a solitary substratum for all the phenomena which we witness, or are conscious of. Then why not, it has been asked, call that substratum matter, and not mind ? I reply, for sundry good and sufficient reasons. In the first place the impressions connected with the terms are always different, and commonly opposed. It would, therefore involve a solecism of thought, and a perversion of language, to employ the word matter to designate the source of mental emotions. And if we are to have a solitary type, that is surely preferable, which *must* be, rather than which may *not* be.

But secondly, I think it has been clearly demonstrated, that under circumstances which I have mentioned, we infer, with a force entirely irresistible, the *cause* of our impressions to be something external to the percipient power, and altogether different from it. There is con-

sequently, sufficient evidence to establish the existence of *two* substrata, between which, as far as we can discover, there is not the slightest resemblance. Now I ask in my turn, if that can be justly termed philosophy, which calls up false associations, and rejects a conclusion, regularly deduced from undeniable premises, in favor of an hypothesis, laboring under an absolute negation of all evidence.

I have thus, gentlemen, in an argument, abstruse, I fear, although as plain as some thought and labor could render it, exposed the mistakes into which the Materialists have fallen. But my design would not be consummated did I not point out what, with regard to the great mass of these misguided persons is, I am confident, the source of their misfortune. It results from a delusion, common to the whole race, and one in which, of course, primarily, we all participate. It is this: Until disabused by science, *we confound familiarity with knowledge*. Thus ask an ordinary person why water runs *down* a hill, and if he thinks you serious, he will be amazed you do not understand so plain a thing. If, however, you were to speak to him of water flowing *upward*, you would make him stare. Yet one of these events, antecedently to experience, was just as probable as the other, nor would one have been one whit more inexplicable, than is the other. But the tendency of fluids to seek a lower level, having been constantly observed, the clear exposition *why* such is the fact, appears in the brief expression, "It is *natural* it should be so."

Precisely in the same manner, from our earliest infancy, we are conversant with matter, or rather the bodies

by which we are surrounded. These, consequently, we conceive we understand. But when at a later period of life, our attention is turned to the operations of our minds, we are at once aware *their* nature is not known. And this discovery being usually made when our curiosity, just awakened, is most intense, our state of acknowledged ignorance is exceedingly embarrassing. A Materialist comes across us, and says, "Be not uneasy. There is no difficulty—no new agent in the case. Your old and familiar acquaintance, matter, will account for all." This assurance is urged so confidently, and appears, at first, so satisfactory, that it would be received far more generally than it is, but for two considerations. These are, first, the sentiment of religion, and secondly, self-respect. Of the former, I shall have something to say by-and-by, and with it the latter co-operates, by not readily allowing us to admit, that we differ in nothing from a clod, or a cabbage, save in the number, variety, and arrangement of our atoms. The metaphysician now steps in, and shows, that the pretended explanation is no explanation at all, since we know no more what gives rise to physical, than we do what produces moral phenomena. For what is called an explanation of the descent of bodies, to recur to the downward flow of water, is a mere declaration, that the law of gravity takes place not only here, but throughout the Solar, and most probably the Stellar System also. But to show the indefinite extension of a fact, so far from pointing out a *cause*, but renders the fact itself the more marvellous—it being obviously *less* wonderful that a

power should be exerted on this earth, in particular, than that it should pervade the universe.

The cultivator of mental philosophy further insists, and as to the bare fact, every one of necessity concurs with him, that there are two trains of events going on, the one within, the other without us, which events have no similarity—nothing whatever in common. It is not therefore, he says, more a maxim in philosophy, than a dictate of sound sense, that *causes cannot be entirely the same, and here but ONE, where effects are utterly diverse*. The problem, then, is solved. There “does more than the single, solitary element, matter, enter into the composition of man.” “Formed of the dust,” he doubtless was, yet has there been “breathed into his nostrils” by his Creator a more subtile—a diviner essence. And this brings us to the second branch of our subject. Had man indeed a Creator, or more generally, had the universe one, or has it existed from all eternity?

That it has so existed, is maintained by a class of reasoners, who have wandered still more widely, and more deplorably from the right path, than those whose errors we have just been combating. I allude to the Atheists. Their number is, I believe, small, but they rank among them some eminent names, that of La Place for example.

In opposing the doctrines of these unhappy persons, it would be, of course, useless to quote the Bible. The argument must, therefore, be one of pure philosophy. And the mode in which I propose to conduct it, is to inquire whence has arisen the belief a Supreme Being, in the minds of men, who from the times in which they

flourished, or the countries in which they lived, could never have heard of revelation ?

Preparatory to the proposed investigation, I must premise a distinction, which has, I apprehend, been sometimes lost sight of. We must not confound the source of the primary idea of the Deity, with the corroborations imparted to that idea, by subsequent observations, and reflections, *after it has been once conceived*.

The idea itself, under the circumstances supposed, has been ascribed to the four following causes ; and I cannot imagine a fifth.

To Tradition.

To the doctrine of Physical Causes.

“ “ Final Causes.

To the workmanship of the Mind itself.

I shall examine them in the order in which they are stated.

Those who rely on the argument from tradition, suppose that the information imparted to our first parents, has been handed down to the present day, from generation to generation, in every part of the world.

But this theory can avail nothing with our opponents, who would call upon us to prove the communication of the alleged information, which it is clear we cannot do to their satisfaction. And to me, I must confess, the supposed tradition seems entirely incredible. Can it be believed, that savages, pressed from birth to death, by the want of raiment, food, and shelter, in so much that some have been found who were ignorant of the use of fire ; can it be believed, I say, that such stupid, starving creatures, would preserve, from age to age, for thousands

of years, a truth, sublime indeed, but having no reference to their daily exigencies?*

Such a supposition being inadmissible, upon mere presumption, recourse has been had to philosophy, and the train of reasoning most commonly relied upon by Theists, until the recent investigations with regard to final causes, was deduced from what are denominated physical causes. The argument has been usually thus stated: As we never see an effect without a cause, if we extend the chain sufficiently, we must ultimately arrive at the First Cause.

But this logical formula has, I fear, no greater claims to accuracy than that of the Materialists, upon which I have just commented so much at large. For, in the first place, the word *effect*, involves a *petitio principii*, by presupposing causation—the point to be proved.

Secondly. Whether there be any such thing as causation or not, it is certain we do not see it. What we do see are events—a series of events, and nothing more. One follows another regularly, in point of time, but invariability of sequence is all that it is possible for us to observe. Thus the bullet is projected from the gun, after the ignition of the powder. To that substance a spark had been applied, &c. &c. Here are occurrences, and occurrences alone. Now it would be manifestly illogical to argue, that *because* a spark inflames powder, *therefore*

* Our Indians, I understand from very competent authority, have no traditions, beyond a very few years. Their tales are such as ignorant, lazy people manufacture, from time to time, to while away tedious hours.

there is a Supreme Being. Yet if *one* instance prove nothing, any number of instances, of the *same kind*, will also prove nothing. Nought, however multiplied, being still nought—nor can physical events ever be tortured into any thing but physical events. A new element must consequently be sought for, and introduced into the reasoning. That element has been stated to be the constitution of the human mind, which, it is alleged, compels us to believe, there is a power in the antecedent, that causes the subsequent incident. Granting there is such a conviction,* and such a power also, yet the latter, if it exist, is never manifested, except *between* two events, and consequently could never have produced the first of those events. But what we are in quest of is a power, antecedent to the primary movement in matter, with secondaries, except as scaffolding, we have no concern. And let it not be said, that as matter is altogether passive, motion in it could never have commenced, but for some agent, other than itself. That there was such an agent, is precisely the point to be proved; and this not being done, as it obviously is not, by the foregoing reasoning, an assumption of the fact would merely oppose assertion to assertion. For

The Atheists, lastly aver, that the series of phenomena which is going on before our eyes, had no beginning, and will have no end—a declaration, which it would, I apprehend, be difficult to impugn by any species of proof, to which they will listen, unless, perchance, the

* The truth of this conviction I admit, but this is not the place to inquire into its source.

following remarks should find favor with some of them. They are far too refined, and elaborate, I admit, as is, in truth, all argumentation that can be brought to bear upon the subject, for the minds of Caffres, and New-Hollanders. But where there is greater reach, and more cultivation of intellect, it may have its weight. At any rate, attaching importance to it myself, I am willing to submit it to the judgment of others.

As the basis of my reasoning, I have to assume,* that the Atheists have *positive* doctrines of some kind or other. For where they take the ground mentioned by Mr. Hume,† that we observe certain circumstances which

* It may be necessary to apprise some of my readers, that where nothing is granted, nothing can be proved. The object of all ratiocination is to show, that the proposition to be established is contained in some other propositions, more or less remote, which are admitted to be true. The primary propositions must, therefore, of necessity, be conceded by both parties, and ought always to be premised, after the manner of Euclid, with his postulates.

† I beg it may be understood that I do not rank Mr. Hume among the Atheists. In what manner his philosophy affects others, I do not know, but to me it has always appeared like logical jugglery. Apparently unconvinced himself, and indifferent to the conviction of others, his skeptical arguments have induced, in my mind, a species of ludicrous wonderment, exceedingly amusing, but sufficiently remote from agreement in his views.

It is, however, greatly to be deplored, that Dr. Reid, unable to cope with Mr. Hume in dialectics, should have introduced into the schools, and ultimately into ordinary use, the phrase common sense. This unfortunate term has, in the estimation of many, dispensed with the study of not only metaphysical, but of all other philosophy. Every blockhead has, therefore, *his* common sense ready on all occasions—to support opinions, for which he can as-

pass without us, and are conscious of various sensations which occur within us, and as beyond these we can perceive nothing, so beyond them we will infer nothing; if, I say, we are to be thus *estopped*, why then, undoubtedly, as all exercise of our reason is precluded, that faculty can neither establish, nor refute any proposition whatsoever. But if the Atheists will advance a single step beyond this position; if they will acknowledge, that our discursive are not inferior to our perceptive faculties, and

sign no reason, and to oppose truths, which lie beyond his comprehension. In short, common sense, in the common acceptance of the word, means a judgment, unerring, *because* uncultivated.

As to the point at issue between Dr. R., and Mr. H., there is, I conceive, no difficulty in confuting the latter. A definition does it. He undertook to show, by *reasoning*, the non-existence of mind. Now to reason, is to arrange ideas, after a certain manner. And what are ideas?—States, or perceptions of the mind. And of these, as remarked in the text, Mr. Hume conceded that he—in other words, his *mind*, was conscious.

It is plain then, that Mr. Hume, who argued against both mind and matter, and the Materialist, who admits the latter, but denies the former, are in the same dilemma. Neither can advance a step, without using, and thus admitting, the very fact he undertakes to controvert.

From what I have now said, as well as from what occurred in a preceding part of the lecture, it is obvious that if those who investigated such subjects, had, when they referred to the mind, without including the body, avoided the use of personal pronouns, much confusion, and error would have been avoided. Our minds feel—my mind is conscious—are forms of expression more precise, and leading consequently more directly to the truth, than when We, and I are employed.

consequently, supposing the logic to be sound, equally entitled to command the assent of the understanding, why then I think they may be dealt with. For my unfortunate opponents having proceeded thus far, will probably admit that there is such a thing as matter, and that it is governed by laws which are uniform. *They*, in truth, cannot object. A disciple of Berkeley indeed, if he who was

“Endowed with every virtue under heaven,”

have now on earth a disciple—he may plead his privilege. But a Berkeleyan and I agree on this occasion, and all others must concede what I ask. Conjoining then, what has been already proved, to these concessions, reasonable, as I think, in themselves, and which, so far as they are *ad hominem*, cannot be refused me, I hope to make out my case. Let us now see if this can be done.

If the substance matter exist *now*, it must have existed from all eternity, or it has been created in *time*. But if created in time, then it has been called into existence by some quality inherent in itself, or by a power both antecedent, and extrinsic. The former hypothesis, however, is inadmissible, because it involves the absurdity of supposing, this creative quality to have *preceded* the genesis, of the very material to which it appertains, and from which it cannot be separated, even in imagination.—A definition indeed settles the point, the very term “quality” implying a previous something, of which that quality is to be predicated. In other words, “the wonderful fecundity of matter,” as La Place has it, could not have been prior to matter itself. It may, consequently,

be held as a demonstrated truth, that if created at all, matter is indebted for its origin to a source other, greater, and more ancient than itself—that is, to the Supreme Being. But such an idea our antagonists will not admit, maintaining, most stoutly, that matter has existed from eternity.

Yet if this be so, then have the laws of matter been also in operation from eternity. For otherwise those laws have been impressed upon it in *time*, and by some external, and superior power, since matter could no more impose *new* laws upon itself, than it could create itself. Our opponents, however, will no more acknowledge such a power in this case, than in the former. The eternity of matter, therefore, and the co-eternity of its laws, are two propositions by which our adversaries must stand, or fall. If either fail them, their only alternative is to change, nay *contract* their creed, it being not only wrong, but too extensive, or they must abandon their reason.

We have now to examine, whether one, or still more, whether both of these positions can be successfully assailed. In attacking them, I shall begin with the second, and confine myself to the *chemical* laws of matter, as the argument deduced from them is equally conclusive as from any, or all the others. Let us then endeavor to ascertain whether there has been no commencement to the action, that is, to the existence of these laws. For no one, I presume, will contend that chemical affinities lay dormant, for countless ages, and then spontaneously burst forth with all their energies.

It is a self-evident truth, that if the universe were com-

posed of *one* simple chemical element, no chemical action could ensue. If it were composed of two, having an affinity for each other, they would combine, and then their mutual agency would cease. Were there three elements only, two might first unite, and they with the third. Were four the number, an additional combination might take place, &c. The general proposition cannot then, I think, be controverted, *that in a body, or system of bodies, where the number of chemical elements, how great soever, is limited at all, the number of chemical changes, which those elements can undergo, is also limited.** These changes are, in fact, *one* less than the elements from which they arise, and being in constant progression, *time* is the only condition requisite for their completion. They are not yet completed, however. They have not, therefore, been going on from all eternity, since in eternity *time* must have perfected, whatever time can accomplish. There was, of course, a period at which, as no chemical changes occurred, there could be no chemical laws. These laws consequently did not then exist. They have necessarily, therefore, originated in time, and as they could neither create themselves, nor be created by matter, they must have been impressed upon matter by some external, and superior power,—which was to be proved.

Again. In every case of chemical action, the stronger affinities overcome the weaker. The tendency, therefore, always is to the firmest unions, and ultimately to those which are absolutely indissoluble. But few,

* The chemical changes, produced by vital action, are too inconsiderable to modify the proposition stated in the text.

perhaps none of these have as yet taken place. The only element, nevertheless, which can be wanting for that purpose—the only one not already present, is *time*. There has not consequently, hitherto been time enough to effect these irrefragable combinations. The processes necessary, therefore, for their completion, have not been in regular progression from eternity, since “in eternity *time* must have perfected whatever time can accomplish,” &c. &c. &c.

But as the foregoing argument is a very general one, a particular illustration of it may not be superfluous.

It is quite clear that oxygen, for example, has a greater* attraction for some one element, than for any other which exists in nature. However the fact may be, we will call that element carbon. With carbon then, oxygen will unite in preference to any other substance, whenever it has an opportunity of so doing. Its tendency to form such a union being incessant, as has already been shown, and the combination when effected being for ever, it is matter of demonstration, that the ultimate result of the chemical laws now in operation must be a state of universal chemical quiescence. But as yet there has not been time for that result, &c. &c.†

* It would answer the purposes of my argument just as well, to suppose equality of affinity.

† Should the arguments stated in the text be admitted, they overthrow two speculations, which have been put forth in the interesting science of Geology. The first is quoted by Mr. Dugald Stewart, who does not appear to have been aware of its fallacy, from, I suspect, Dr. Hutton. The idea suggested is, that a succession of changes, from chemical action, of course, is to take

There was then, an epoch when no chemical laws prevailed. But matter, destitute of chemical laws, is contrary to all our knowledge and experience, and there-

place upon this earth "through the endless flux of time." But according to the doctrine for which I contend, there is a limit to the number of these changes; and the occurrence of one consequently diminishes to that extent, the possible amount. Sooner or later, they must, therefore, come to an end.

The second hypothesis, which is incompatible with my reasoning, has been brought forward by Mr. Lyell. That accomplished and indefatigable Geologist, supposes that the causes, of necessity chemical, now modifying the surface of our globe, continue to act with all the intensity of former days. But this, it appears to me, cannot be so. Because in addition to what I have stated in the text, stronger affinities will, *cæteris paribus*, *take precedence of the weaker in point of time*. Consequently the most violent combinations will occur first, and then the less violent, in the order of their strength, until all visible action ceases. Now the only method of eluding this argument is to show, that in the progress of time, circumstances arise which compensate for the operation of the foregoing principle, and maintain uniformity in the intensity of chemical action. And this I conceive to be not only impossible, but the reverse of the fact. For every new union, so far from *predisposing, indisposes* a particle to enter into new associations. Thus, sodium is more ready to combine than soda; soda than the carbonate of that substance; the carbonate than the sulphate, &c., until the metaloid will enter into no further combination at all. *A priori* reasoning, therefore, seems to me to confirm the theory of Mr. De La Beche, and, I believe, the majority of Geologists, that the powers, now effecting Geological changes, are less energetic than they formerly were. If my observation may be considered as dust in the balance, between such authorities, it coincides with the latter, and corroborates my argument.

The result of the whole is, that sooner or later, so far as elective affinities are concerned, a state of repose must occur, never to be

fore its existence in such a state cannot be admitted. It follows, therefore, that as the chemical laws of matter have had a commencement, so matter itself has had a beginning, and consequently neither of the propositions required by the Atheists conforms to the truth.

How then can this argument be rebutted? Why, recourse must be had to the following suppositions: First, that the universe, being unlimited, so also are the chemical elements of which it is composed. Secondly, that these elements are infinitely various. Thirdly, that their relative position in space, has enabled, and will enable their affinities to act from eternity. Fourthly, that in every individual element, the force of these affinities, is infinite. And finally, that of this force, our earth has, in point of fact, been the unceasing subject.

Now to assume and maintain five gratuitous propositions, is rather *unreasonable*, in those who proclaim reason for their guide; while to believe such a number of suppositious facts, and such facts! would seem a stretch of faith, little to be expected, in those who profess a wholesome incredulity. Let us see how far profession and practice coincide.

Whether the universe have, or have not limits, lies beyond our conception, and is incapable of proof. But

disturbed, through the endless lapse of time, without the intervention of that Power whose fiat first called matter into existence, and then subjected it, for the time being, to such rules as comported with His good pleasure. The appointed duration of these rules can, of course, be only conjectured. Apparently they will be exhausted by a few millions of years. And what are these in the gulf of eternity?

if material atoms are numberless, it by no means follows that the same holds true of chemical elements. Since in this discussion all the oxygen, for example, in existence, is represented by unity. Hence, if we assume such elements to be infinitely abundant, we are obliged further to assert, that, to our apprehension, particles of matter are, notwithstanding, infinitely more numerous than they.

But, secondly, mere number in the elements will not suffice. They must be infinitely diversified in character, for otherwise irrefragable combinations would promptly ensue, and there is no reason to believe, that any thing of the kind has hitherto occurred, at least, to a considerable extent.

Thirdly, chemical affinities act at insensible distances only. Now, where is the power, and whence the force, that can bring into apparent contact, indefinitely small portions of bodies, enormously bulky, and infinitely remote from one another?

Fourthly, supposing the molecules, composing these masses, to be sufficiently approximated, that an interminable chemical series should take place, every one of these chemical elements must possess infinite chemical power. For if the particle A be chemically combined with the particle B, there must exist between them a definite force of attraction—great or small. But stronger affinities can alone overcome those which are weaker. A consequently will not reject B, to unite with C, except it have for C a greater affinity than for B. By parity of reasoning, C will give place to D, only upon the same principle of superior force, and so on to the end of the al-

phabet. But a power which can act, through an infinite series, with an energy always exceeding its previous intensity, must be infinite. A, then, must have a chemical attraction that is infinite—which was to be proved.

But it may, perhaps, be alleged, that the Atheists require neither diversity, nor infinitude of force in chemical elements, since if there were a sufficiency of oxygen and hydrogen, and no other substances, they might go on combining for ever, and the resulting water remain unaltered. Then, I reply, is the universe divided into three portions—one in which chemical changes are perfected—one in which they have not commenced—and one, that is ours, in which they are in progress.

Now reason can never authorize us to assume the unknown, that we may argue against the known. Moreover, for the two former of these conditions, there is not only no evidence, but all knowledge is against them—the whole universe, as far as our observation can extend, suffering mutations. Thus in 1572, according to Dr. Halley, a star appeared, for the first time, in the chair of Cassiopeia which shone with a brilliancy scarcely inferior to that of Venus. It gradually grew dim, however, and disappeared at the end of sixteen months, nor has it since been seen.

Other stars, noted by the ancients, are no longer visible, while some, not mentioned by the older astronomers, can be now observed. Hence, during the insignificant period of less than 3000 years, ascertained alterations have occurred in the stellar system. Chemical affinities are, consequently, as far as we can perceive, or are at

liberty to suppose, every where in action, and chemical changes every where in unperfected progress.*

But lastly, can any person observe the many feeble chemical associations which prevail, between the fifty, or sixty known, or one thousand, if you please, unknown elements, composing the surface of our earth, and seriously believe, that there has not been time enough from eternity, for the formation of multitudes of combinations more strict, if not immutable? So far then from granting the five postulates required by the Atheists, not one is admissible.

To revert, however, to the fourth of these postulates. Either chemical changes had a beginning, or they had not. In the former case, my argument is, confessedly, complete. But it has, I think, just been incontestably proved, that the latter supposition, equally with the former, requires a power, uncreated, infinite, and eternal. There is therefore an end of the only plea urged by the Atheists—a determination not to admit those attributes, and then ascribe them to an inscrutable—they cannot tell what. The admission, and the ascription too, must

* I have been asked what disposition do I make of La Place's notion, that our system is a condensed nebula? My reply is, I am not competent to judge of the force of an astronomical argument, and content myself with a state of igneous fusion, as the primary condition of this earth, of which we have satisfactory evidence. Those who think themselves authorized to go further back, can do so; but I would ask, when once a nebula has been condensed, what is to re-expand it to its former tenuity? And if this be impracticable, are not changes in progress, which, when once accomplished, are unalterable? For these, consequently, there has not, as yet, been *time*. But in eternity, time, &c.

per-force be made. And you are further to recollect, it has been already sufficiently established, that the *qualities* of matter, of which only we can be cognizant, are to us secondary perceptions, while the inferred substratum of those qualities is unknown, and unknowable.—The inevitable question, then, is, Of *what* are we to predicate power, uncreated, boundless, and eternal?—Shall we affirm that it belongs to the hidden cause of physical phenomena—is the inherent and unalienable property of every individual particle of matter? This cannot be, because it has been shown, that whether or no there be such a substance as matter, must for ever remain a philosophic doubt, and it is manifest folly, to assert that to be eternal, whose *inferred* present reality, is derived from one, and that a fallible sense. Admitting, however, the necessary *belief* of the Atheists in this reality to be well founded, the existence of mind has been abundantly proved one of those truths *the contrary of which is inconceivable*. Hence our opponents, adopting, through faith, one substratum, are constrained, by stress of logic, to admit a second. But both of these substrata being, upon the Atheistical hypothesis, of equal duration, and equally independent, neither could call the other out of nothing. The problem under discussion is consequently reduced to the following dilemma: Our adversaries have to elect between *two* uncreated essences, or *one* creative power. Yet a duplication of primordiates scepticism cannot allow, nor will they be tolerated by philosophy. If then the position assumed by Mr. Hume be abandoned—if our discursive faculties are to be employed, and the results of our reason trusted, the Atheists must *con-*

tract, as well as change their creed, which it was premised they could be compelled to do. Hence must they reduce sempeternal existences to one, discard suppositions, gratuitous and impracticable, and acknowledge that chemical laws* began, and that matter originated in

* These laws, to avoid irreverence, are usually denominated the laws of matter, or more generally, those of nature.

But those who speak of the laws of nature, should take especial care not to connect with that expression a false association, the most prolific source, as I am persuaded, of Atheism. The mistake alluded to, arises in this manner. From our infancy we hear of law, as a power requiring us to refrain from, or to perform some act. The impression of force—controlling force—is therefore primarily, strongly, and indissolubly united with our idea of law. But nothing can be further from the truth than such a notion, when the word is applied to matter. It is then precisely equivalent to a fact, more or less general, perhaps ultimate, and if so, no other account can be given of it, than that such is the Will of the Creator, as manifested at this time, and in this place. We consequently are not authorized to aver, that this Will is *now* acting, in every particular, after precisely the same manner in all other parts of the universe, or that it shall on the morrow continue to act here as it did yesterday, and does to-day. Accordingly, they who declare the world is governed by its laws, or moves according to its laws, simply state that, as far as our observation extends, the ordinary course of events is, in point of fact, uniform. But as to any reason for this regularity—any coercion by which it is brought about, we perceive nothing. The philosophy, therefore, of La Place, and his brother Atheists, amounts to no more than this, that the sun, and the planets revolve—as they revolve.

It follows, as a corollary from the foregoing remarks, that if, among lawyers, *exceptio probat regulam*, in science one exception is fatal—it not being possible for the same thing to be fact, and no fact.

time. The one, and the other have consequently had an Author, and the universe, of course, a Creator—AS WAS TO BE DEMONSTRATED.

The train of reasoning, gentlemen, which has now been brought to a close, it is almost superfluous to repeat, could never have occurred to rude savages. As far, therefore, as they are concerned, the inquiry recurs, whence have they derived their belief in a Supreme Being, when that belief could not be traced to revelation, to tradition, nor to such views of physical events, as they were competent to take? Let us now then examine into what are termed Final Causes.

The application of that phrase to causes has always appeared to me unfortunate, since when thus conjoined, its meaning cannot be understood without the aid of a definition. It refers to the uses or ends, for which something is made, or done. Thus, to adopt Adam Smith's illustration, the final cause of the movements of the hands of a watch, is to show us the hours of the day, while the efficient cause of those movements is the elasticity of the springs of the machine.* In Natural Theology, it has

* Efficient and final causes are not, in fact, more broadly distinguished in physical, than in moral inquiries. Yet it is by confounding those causes that sceptics, from Mr. Hume downwards, and misanthropes of every age, who have denied the reality of human virtue, have endeavored to sustain their lamentable error. Take benevolence as an example, and the question can be settled without the aid of logic, or philosophy, by every one who will consult his own bosom, and answer the following questions. Breathes there a sane, human being, who on seeing a child fall into the water, and there struggle for its life, would not *feel* an emotion to

reference to what are supposed to be the designs of the Divine Architect in the construction, and arrangement of the Solar System, and more particularly in the organization of the animals and plants living upon the earth. The subject has been recently elucidated, much at large, and in some respects very ably, in the well-known Bridge-water Treatises. But with regard to the immediate object which we have in view, I must say, that in my estimation, these elaborate performances are a failure. He who will not admit design, and therefore infer a designer, from observing the structure and adaptation to his service, of his own hands, and eyes, his other organs, and other limbs, may be safely pronounced beyond the reach of any amount of evidence of that description.

But be that as it may, for our purpose, arguments deduced from final causes, are of no avail. Since no one can imagine that tribes of savages, stupid and ignorant as they are frequently found to be, would ever engage in speculations so refined, and so remote from the affairs of ordinary life, as are reasonings about uses and ends. In a philosophical age, indeed, considerations of this kind become objects of attention, as a matter of course, and to the Theist they are highly curious and interesting.* But

relieve that child? And if so, what is the nature of that emotion?

My queries, it is to be observed, are propounded upon the supposition *that the spectator performs no act*, so that there shall be no blending of subsequent considerations, arising from having done our duty, with antecedent, and moving states of the mind.

* Every inquirer into the wonders of creation, has, I presume,

upon the Atheist, I fear, they will have little effect, because, in my humble judgment, the whole doctrine is entitled to nothing like the weight usually ascribed to it. That a designer may be deduced, from what we observe in the mechanism of animals and plants, I allow. But bearing in mind the well-known rule of logic, that conclusions can never have greater breadth or strength, than the premises from which they are derived, I submit to

his peculiar taste, but to me the application of the doctrine of final causes to moral phenomena, has always been far more agreeable than to physical arrangements. For our faculties are so humble that there must be about the latter a coarseness, and a clumsiness, if words of such apparent irreverence may be used, to bring them down to the level of our capacities. From these derogatory associations the first are exempt. Thus the mechanism by which the bones are connected, and the blood propelled, is sufficiently obvious, while the brain, from its infinitely more delicate and curious structure, is to our dull perceptions very nearly a *terra incognita*.

But the gratification is great, and frequently unmingled, when, in contemplating human conduct, we observe how each toiling pismire, heedless of others, and bent upon the attainment of his own little ends, but verifies the words of the poet—

— “ Each seeks a separate goal,
But Heaven’s is one, and that the whole.”

Whoever wishes to see this, on a large scale, may consult the Wealth of Nations, and they will be there taught the manner in which the vanity and selfishness of the nobility broke the chains of the feudal system, and thus conferred upon the world the liberty which we now enjoy, and its consequences, knowledge, wealth, virtue, and happiness. These have increased, are increasing, and, in my hope and belief, will continue to increase, so long as it shall please the beneficence of the Supreme Ruler, to continue the present order of his creation.

any person of reflection, how poor, how inadequate are the impressions which the contemplation of animal or vegetable structure can impart, of that Awful Being, the very idea of "whose might, majesty, and dominion," subdues the reason, and dazzles, to blindness, the imagination. When sufficiently recovered from these overpowering conceptions to exert his ordinary faculties, nothing can exceed the littleness, the insignificance of man—of every thing that appertains to him, and of every thing by which he is surrounded.* Nay, when entirely collected, he will perceive that he is environed on every side by imperfection.† The universe, we have seen, tends if

* "Lord! what is man?" says the Psalmist, and I doubt whether there ever was an intelligent Atheist, whose heart did not sometimes re-echo the sentiment

† Those who think they can reconcile physical imperfection and moral evil, however slight, or transitory, with the attributes of the Deity, must extricate themselves, as they can, from the following argument. It was, I believe, framed before the days of Epictetus, but may, if I mistake not, be found in his works.

Either God has the power to prevent evil, and not the will, or he has the will, and not the power, or neither, or both. But the first supposition impeaches his benevolence, the second his omnipotence, and the third, the one and the other. The fourth affirmation must, therefore, be adopted. He is then omnipotent and benevolent, and there is, consequently, say the stoics, no such thing as evil—what is thus designated being accidents, beneath the attention of a wise man. Happy is he whose nerves and temper harmonize with such logic!

Archbishop King quotes the foregoing reasoning, and vainly inclines to the *intractability* of matter, as some of the older philosophers termed it, as a mode of escape. Paley, too, has examined the question, but not with his usual ability, nor, what is much more

not to annihilation, yet to a species of death, in the close of all chemical action, nay of mechanical motion also, if some recent speculations be well founded, which would prove a resisting medium diffused throughout space. But

remarkable, with his usual candor. The following is his syllogism :—

“ Either God wished the happiness of men,
or He wished their misery,
or He was indifferent and unconcerned about both.”

He then goes on to say, that God has not wished our misery, nor is he indifferent, and therefore he wishes us to be happy.

Now here it is manifest the fourth and true predicate has been omitted—that our Creator has designed us to enjoy, and to suffer. This being the fact, such must be his will. Since the terms are convertible, to say a thing does, or does not happen, and is, or is not in conformity with the intentions of Jehovah.

Evil, Paley goes on to say, no doubt exists, but it is never the object of “ contrivance.” Whence comes it then? Through accident, or, as he seems unwillingly to admit, from inability? But in philosophy there is no such thing as accident, nor, as we have seen, can inability be predicated of an Omnipotent Being. But Paley is mistaken in his fact. Evil *is* sometimes designed, as no one can doubt, that our teeth were as much intended to ache, upon occasion, as to chew in ordinary. For they are furnished with nerves, which answer no other known purpose, except to give pain, since these may be destroyed without impeding mastication. At any rate, every one must see, that our teeth might have been rendered as insensible as our nails. And what shall we say of the inevitability of death, the apprehension which it causes, and the suffering which it inflicts throughout animated nature?

By the way, it is a singular circumstance, geology should prove that animals preyed upon each other ages before the creation of man, precisely as they now do. Whatever, therefore, may be thought of Milton’s poetry, his philosophy was at fault when he sang of

as for us, *we* manifestly, and every other form that lives, have appointed periods of birth, growth, maturity, decline, and dissolution. It is in vain for the Theist to urge that this is a part of the Great Designer's plan. "True, most true," the Atheist replies, "but that only shifts the imperfection from the execution, to the scheme, and you are not authorized to predicate omnipotence, and omniscience where the plan is defective, more than where the fulfilment fails.

On the whole, then, I conclude that the idea of a Supreme Being, cannot be traced in every people among whom it is to be found, to the bible, or to tradition. I conclude further, that reason alone, however confirmatory of that idea, when once developed, can never, under the circumstances supposed, have originated it from the con-

" the fruit,
Of that forbidden tree, whose mortal taste
Brought Death into the world, and all its woes."

If it be asked, how I extricate myself from the difficulty abovementioned, my reply is, I do not extricate myself at all, since there is sufficient evidence to compel a belief in the Omnipotence and Benevolence of the Creator on the one hand, while on the other, painful experience and observation daily prove the existence of evil. The facts I cannot reconcile, and where I "can't unravel," I "learn to trust."

I have heard it suggested in argument, that the imperfection of man is no impeachment of the Omnipotence of the Creator, because it is not derogatory to suppose him incapable of creating a perfect being — that is, one equal to himself.

The reply to this is, I fear, equally brief and decisive. If there be a doubt whether the Deity could have created us perfect, there is no manner of question he could have formed us far more perfect than we are, had he thought fit so to do.

templation of causes, either physical, or final. It follows, consequently, we must seek elsewhere for the source of this awful impression, and that source can be no other, than the workmanship of our own minds. These, when properly constituted, and improved to a certain, and very moderate point, develop the deep conviction that there is a God; that he is Supreme, and that we are his dependent creatures. Theism then is of that class of inherent feelings termed instincts and is usually denominated the sentiment of religion.*

* The sentiment of religion, however powerful, is but one of *three* guides to the paths of rectitude. The other two are, the Reasoning Faculty, and the Moral Sense. Though associated in the promotion of virtue, these several powers of the mind are, in their nature, altogether distinct, and consequently may be, and in point of fact are, commingled in every possible degree, in different individuals. The first may be exalted, the second perverted, and the last obtunded, or vitiated. Or contrariwise, our morality may be sensitive and just, our deductions sound, while our religious emotions are torpid.

But it should never be forgotten that, although the *tendency* of *all* be the same, it is, nevertheless, the especial office of the moral sense, to warn us of the wrong, and to inflict instant punishment upon us, if that wrong be committed.

Now Mr. Hume has been severely, and justly censured, for endeavoring to remove *one* motive to right conduct. But if he, and his followers are the enemies of religion, reason has also its foes, who are far more numerous, and to the full as bitter. And with regard to the moral sense, it is either pretermitted altogether, or, if mentioned at all, it is solely with a view to its denunciation. Thus there are multitudes whose sincerity it is impossible to doubt, but whose wisdom it is equally impossible to admire, who do whatsoever in them lies, to destroy, not *one*, but *two* of the three safeguards to virtue, which a beneficent Creator has vouchsafed to his

Distinct from reason, though, as we have seen, fortified by that faculty when sufficiently enlarged, and cultivated, it forms the characteristic of our race. I know of no

creatures. Is it any wonder then, that a ratio at once high, and inverted, should be found so frequently to prevail between the vehemence of religious professions, and a discharge of moral duties?

The religious impression, I may further remark, although the most sublime that can enter into the imagination of man, and therefore solitary in degree, is not insulated in kind. We have other instincts equally original, and more direct in their bearing on civilized society, in so much indeed, that political institutions cannot exist where they are disregarded. Of these, it is sufficient here, to mention our sense of justice, and the feeling of love. The former teaches us to respect what belongs to others; the latter, distinct from the desire for offspring, and so opposed to mere animal passion, with which gross writers confound it, that the contrast forms the basis of nearly the entire mass of novels, predisposes the virtuous minded of either sex, to form unions which shall terminate only with life. The laws, therefore, which enforce the rights of property, and which render the matrimonial compact indissoluble, at the will of the parties, are not, as some superficial thinkers have supposed, the arbitrary enactments of ignorant, and interested legislators. That these enactments should be productive of occasional evil, amounts to no more than this—man is their subject. But the sources of these ordinances lie deep in the recesses of the human heart, where, shrouded from the gaze of the ignorant, or the consciousness of the cold, and the sensual, play the secret springs of human conduct, and human institutions. To the streams which flow from these fountains, when these are themselves uncontaminated, the lawgiver merely, perhaps unwittingly, gives force. Perceiving that certain observances are indispensable to the existence of those forms of polity, which it is his object to perpetuate, he frames his statutes accordingly. But in so doing, he in effect says, “I but carry out the intentions of your Creator.

other attribute of man, in which the lower animals do not to a greater, or less degree, participate. But, in religious emotions, he stands alone, and pre-eminent. I have always, therefore, thought that an individual, who labors under the grievous misfortune of being an Atheist, having rejected the divine image to which, by inheritance, he is entitled, and which is so stamped upon him, *ut nemo delere posset, aut devellere, qui TOTAM STATUAM non imminueret**—so far from being reviled, and upbraided, should be pitied, soothed, and, if possible, restored to the “high estate” from which he has fallen. Then would he recover his lost birth-right, and rejoin the universal human family, in acknowledging his Creator, and in paying homage to that Dread Power, in whom he, and we, and all, “live, and move, and have our being.”

If you, for whom I legislate, will obey the guides which he has implanted in your bosoms, to make you virtuous citizens, my regulations will be null, because did they not exist, you would nevertheless comply with what I now enjoin. If, however, your monitor be silent, or your inclinations vicious, if, in defiance of your Maker's injunctions, you will steal, rob, or commit adultery, then shall you meet, at my hands, with that punishment which you have merited, that you may be reformed, and others deterred from following your vicious example.”

In all this there is, of course, nothing new, but a re-obtrusion of exploded errors, requires a re-iteration of established truths. Moreover, I could add to Mr. Hume's admirable remarks on the philosophy of matrimony, physiological arguments, both novel, and of great weight, but this is not the place.

* John Smith of Cambridge—in allusion to the celebrated statue of Minerva, by Phidias. My quotation is from Mr. D. Stewart.

